AMERICAN
EDUCATIONAL MONTHLY.

VOL. II.—APRIL, 1865.—NO. 4.

THE ALBANY ACADEMY.

THE Albany Academy is one of the oldest of those institutions which, established under the Regents of the University of the State of New York, have done so much to advance the interests of education in the Empire State. As a type of its class, we will give a brief sketch of it. This institution celebrated its semi-centennial anniversary in June, 1863; and it is chiefly from the admirable historical discourse of Orlando Meads, Esq., of Albany, and the eloquent and beautiful commemorative oration of Hon. Alexander W. Bradford, of New York (both of them Alumni of the Academy), delivered on that occasion, that we glean the following facts.

The charter of the Albany Academy was granted in 1813, during the war with Great Britain. One can readily believe that great struggles for national life, with the mental activity engendered, are conducive to the inauguration of great educational and humanitarian schemes. Men's brains become fertile under the stimulus of momentous events, and what their hands find to do, they do with a will and a might of which "in the piping times of peace" they are incapable.

The movement for founding the Academy began in the Common Council, during the mayoralty and by the instigation of Philip S. Van Rensselaer. Property and grounds valued at $20,000 were appropriated by the city; and after liberal private contributions for a suitable building, the Common Council supplemented their former grant by a further donation. The building which was erected cost $90,000, and is still one of the chief architectural ornaments of the city. The charter, granted March 13, 1813, enumerated the following trustees: Stephen Van Rensselaer, John Lansing, Jr., Archibald McIntyre, Smith Thompson, Abraham Van Vechten, John V. Henry, Henry Walton, William Niell, John M. Bradford, John McDonald, Timothy Clowes, John McJimpsey, Frederic G. Mayer, Samuel Merwin, and the Mayor and Recorder of the city, *ex officio*. Dr. Benjamin Allen, of Cambridge, Massachusetts, was principal and professor of mathematics, Rev. Dr. Joseph Shaw professor of ancient languages, and Moses Chapin (now Judge Chapin, of Canandaigua) English Tutor. The cost for tuition was at first $8 per quarter, but at the end of the first year it was found necessary to raise the charge to $12.50 for the classical, and $10 for all other students. Both the trustees and the faculty had exalted ideas as to the character of the instruction to be imparted. The examination was conducted with marked rigor, and the discipline was of the old-fashioned kind, in which the rod was used with unstinted liberality. On one occasion, it is narrated, when some misconduct of the students was brought to their attention, the trustees adopted a resolution inquiring why the usual and proper chastisement had been omitted. Mr. Meads adds: "It is due, however, to the professors to say that they were rarely, if ever, justly chargeable with any neglect of duty in this respect."

At the opening of the second academic year, Rev. Isaac Ferris (now Chancellor of N. Y. University) was appointed classical tutor. During the summer of 1817, Dr

Allen having resigned the principalship, Theodoric Romeyn Beck, M. D., was appointed his successor. This position he held till 1848, and by his zeal and learning, and his unsurpassed administrative abilities, soon succeeded in raising the institution to the highest reputation. The classical department, under Dr. Shaw, and after his death, in 1829, under Dr. Peter Bullions, attained great distinction. The drilling under these hard-headed old Scotchmen was, as is well remembered by their pupils, of the strictest description. The grammar was daily repeated in all the classes, from the lowest to the highest. The course of reading in the Greek and Latin classics was as extensive as in most colleges. Every means was employed to give a mastery over the languages—parsing, scanning, written translations from Greek and Latin into English, and *vice versa*. "A false quantity," says Mr. Meads, "struck every ear like a discord, and was an offense, never suffered to pass unnoticed, that brought down swift vengeance upon the offender. Nor was this all; as the student advanced to the higher forms, his attention was directed to the noble thoughts and the felicities of expression of those grand old writers whose works have become the models on which the intellectual tastes of the young have been formed in all succeeding ages." It is believed that this high reputation which the institution gained for classical instruction under Drs. Shaw and Bullions was maintained afterwards by their successors in the same department, Dr. William H. Campbell, Rev. William A. Miller, and the present classical professors.

The mathematical and scientific departments early attained an equal footing with the classical. Dr. Beck's labors in science were enthusiastic and inspiring. Not only to his own pupils, but to the people of the town, did he communicate his enthusiasm for scientific pursuits. He opened the lecture-rooms of the Academy to the citizens, and delivered valuable series of lectures upon chemistry. He formed a scientific society, holding its meetings at the Academy, which was one of the pioneers in the formation of collections in Geology and Natural History. Long before the present State cabinet was founded, these collections had attained great proportions. From his position in the capital of the State, Dr. Beck exerted great influence, and was unwearied in promoting the geological survey. Indeed, one is astonished at the multiplicity and magnitude of the enterprises in which he was engaged. In addition to those already mentioned, he was mainly instrumental in founding and collecting the present magnificent State Library. He was a regular lecturer at the Fairfield Medical College, and at the Albany Medical College. He made the study of medical jurisprudence a specialty, and prepared a work which has become a standard in both hemispheres. Amid all, he did not forget the minutest of his duties at the Academy. He had a passion for details, for collection and classification. All the records and catalogues of specimens of the Academy and Institute are in his own handwriting. He kept a register of all the students who entered and left the Academy, and was not content with this bare record, but followed them into life, noted facts about their career, cut out scraps from the newspapers concerning them, and followed them till death carried them from his view.

"And there was another professor," says Mr. Bradford, "whose life has been spared, and his fame extended, until the respect and applause of the world have wreathed his brow with laurel,—who rose with the sun to instruct his pupil eager for knowledge,—who, giving his heart and soul to the duties of the school, had yet time for exploring the deep paths of science,—who, with his wires and silk thread, winding miles of insulated copper wire, in the Commencement Hall of the Academy, patiently toiled his way, to the demonstration of the magnetic power of the galvanic battery, and, years before the invention of the telegraph, proclaimed to America and Europe the means of communicating by the electric fluid." Prof. Henry was connected with the academy from 1826 to 1832, during which time, as intimated above, he prosecuted his researches in Electro-magnetism. He was the first to make known the fact that the current could be driven through wires of great length. He had a stretch of wire more than a mile in length,

extending in circuits around one of the rooms of the academy building, and by his electro-magnetic apparatus projected the current through the entire length, so as to ring a bell at the furthest end. His discoveries were announced in "Silliman's Journal" in 1830 and 1831. With all his ardor in scientific investigation he was an able instructor. He had remarkable inventive genius in mechanical contrivance, and many valuable pieces of apparatus still remain in the institution which were contrived by him, and constructed in a great measure with his own hands. At the meeting of the Association for the Advancement of Science, held in Albany in 1851, Prof. Henry said:—The Albany Academy is my *Alma Mater*. . . The Academy was and I presume still is, one of the first, if not the very first institution of its kind in the United States. Its system of education is more extensive and more thorough than in many colleges in our country. It early opposed the pernicious maxim in education, that a child should be taught nothing but what it can perfectly understand, and that the sole object of instruction is to teach the pupil to think. The Academy adopted the more philosophical maxim that the child should be first taught *to do;* that *art* should precede *science*."

The policy of the Academy, its systems of instruction, were mainly determined by these men; and their successors have had little to do except to follow in the road so ably marked out for them. The plan has been to make it what the city government intended it to be when it was endowed,—a great school for training the boys of Albany for their future employments in life. Hence it could not be a mere school for preparing boys for college. A majority of those who seek an education within its walls, never enter a college. There they must receive all the education which they ever get. They must be trained, therefore, in all the the subjects which, considering their age, would constitute a liberal education. Their classical drill must be something more than just sufficient to fit them for the Freshman class in college. Their mathematical education must be such that without further training they will be prepared for all commercial and professional pursuits. In its course of study it was intended to have the place which the German gymnasia fill in the Prussion system of education.

It was also an aim in the management of this school to furnish a continuous and progressive school of studies suitable for boys of all ages. Facilities for education were therefore afforded for very young boys, so that the principles which were to govern their education in later years might also be employed in their earlier. The advantages of the plan have been appparent. The greater number of the best students in the higher classes are those who have begun their education in the lowest forms.

The students of the Academy are divided into two departments, called the academic and the preparatory. The division is made strictly in accordance with the advancement of the pupil. Each department is provided with a study-room, presided over by one of the faculty. The recitations are conducted in separate rooms, where only the teacher and his class are present. Each department is divided into classes according to advancement, and the pupils are passed from one to another after an examination. The studies of each class occupy a year. If a student should enter the lowest class, and remain a year, and no longer, in each, he would require nine years to complete the whole. At the end of the course a diploma or certificate is bestowed upon the pupil. In the annual catalogue the names of the pupils are arranged in their classes according to their grade during the year. Four medals are bestowed each year for proficiency in various branches of learning; for Mathematics, for Classics, for Natural Philosophy, and for English Composition. Two prizes of books are also now offered by the principal for English Composition.

The daily session of the school extends from 9 A. M. to 2 P. M., with a brief recess at noon. At the opening of the session each morning the entire school is collected for a religious service. The academic year extends from the first of September to the first of July, with a vacation of a week at the Christmas holidays. The Academy receives annually a small sum from the Board of Regents, as its share in the distribution of the Literature Fund, and a small sum

from the income of the Delavan Fund for the education of poor boys. With these exceptions the entire income of the institution is derived from its tuition. The charges for tuition vary with the department and class from $6 to $15 per quarter.

The patronage of the Academy is mainly from the city of Albany and its immediate suburbs. It has no boarding establishment in any way connected with it, and hence it is not desirable to seek for or secure any considerable number of pupils from abroad. The number of pupils in attendance averages from 200 to 300, of whom about one third are pursuing classical studies. About five or six leave the academy each year to enter college.

The trustees have established a system of district-school scholarships, by which one pupil from each of the public schools of the city is received and educated free of charge. Henry W. Delavan at his death bequeathed to the Academy a fund of $2000, the income from which should be used to pay the tuition of such a number of poor boys as the income would allow.

On the close of the academic year there is an annual "Exhibition," at which about a dozen of the oldest and ablest boys of the school deliver original orations. These exhibitions compare favorably with most college commencements. The medals for proficiency in various branches are on those occasions awarded, and the diplomas and certificates bestowed.

The faculty of the Academy consists of a Principal who is also the professor of Mathematics and Natural Philosophy, a professor of the English Language and Literature, a professor of Greek, a professor of Latin, a professor of German and French, a Superintendent of the Preparatory Department, and four or five assistants. The discipline is in the hands of the faculty and consists of about the usual proportions of moral and physical suasion; with perhaps a less tendency to the latter than in the earlier days of the institution. The tone of feeling among the boys is healthful. The amount of earnest study exacted and obtained is nearly or quite all that is consistent with good health and good spirits. There is observable less of that over-drilled, spiritless style of work than exists in most city schools.

A few words will bring the history of the institution down to the times we have been describing. After Dr. Beck's resignation in 1848, Rev. Dr. W. H. Campbell, now President of Rutgers College, was elected principal—which place he continued to fill till, in 1851, he was called to the Theological Seminary at New Brunswick. Dr. George H. Cook was his successor, and continued till, in 1853, he was elected Professor of Chemistry in Rutgers College. He was followed by the Rev. William A. Miller, whose recent and early death has deprived the Church of one of its first minds and most brilliant scholars. During the fifty years of its existence, nearly 5000 students have been educated within the walls of the Albany Academy. Some of them fill the most distinguished places in the country. They are found in every business and employment of life. It can well be believed that their early training was not without effect upon their subsequent career. The prospects of the Academy are in every respect favorable.

POPULARIZING GEOLOGY.

DURING the last two hundred years, all enlightened portions of the world have become familiar with the doctrines of modern Astronomy. The figure and motions of the Earth, its relations to the sun, moon, and planets, the nature of the fixed stars, these and kindred topics have been discussed in formal treatises, repeated in the language of common life, in schoolbooks, in newspapers, in sermons, invested with the charms of poetry and eloquence. In short, they enjoy all the privileges and immunities of established truths. In addressing each new generation of men, they have, like hereditary governments, the immense advantage of appealing to an undis-

puted supremacy in the past. And when the more startling problems of Astronomy are brought before us, such as the velocity of light, the weight of the planets, and the distances of the stars—problems, the solution of which almost forbids us to pronounce any others insoluble—it is vastly easier for us to accept these statements from the fact that we cannot remember the time when we first learned the primal truths of Astronomy, that the earth is round and revolves about the sun.

There is another branch of modern science that stands not a whit behind Astronomy in the grandeur, the certainty, or the value of its conclusions, but which shares very unequally with it in popular favor. *Geology* can substantiate as many claims upon general acceptance as Astronomy, but thus far instead of recognition and welcome, it is met with a large measure of aversion and distrust.

Its periods demand of the mind as lofty a flight as do the spaces of Astronomy; and if the forces which work within its domain cannot claim for themselves the magnificence that belongs to the all-embracing law of gravitation, they find a compensation in the deeper interest that must always surround the history of life on the globe.

It differs from Astronomy, it is true, as to the modes of reasoning by which it reaches its conclusions, but these conclusions are none the less reliable on this account. If nothing can be counted sure except that for which a mathematical demonstration is provided, then we are poor indeed. The truth is, no man ever approaches the study of Geology in the teachable spirit, which, as Lord Bacon observes, the kingdom of Nature and the kingdom of Heaven alike demand, without becoming a disciple. It must be acknowledged that many instances can be adduced in which men under the tyranny of a foregone conclusion have acquired a certain degree of familiarity with Geological facts, while still rejecting all Geological theories; but such cases prove nothing. Astronomy had a precisely similar experience two hundred years ago.

As to the value of Geological truth, it is only necessary to observe, that while the "sermons in stones" have as potent a persuasion as the "stars in their courses," they have a hundredfold more modes of access to the mind.

But while we meet on every side with the recognition of the truth that the earth is *round*, how seldom do we hear the equally momentous deduction of Geology, that the earth is *old!* The line of Astronomy is gone out through all the world, but Geology is like the voice of one crying in the wilderness. The praise of Astronomy is perfected out of the mouths of babes and sucklings, while men can be found even in the most cultivated classes of society who declare that they know no reason for believing the earth to be more than 6000 years old. And a much larger portion of the educated class, while yielding a grudging recognition of the existence of Geology as a science, disparage its conclusions and discard its results, and deem themselves to be acting the part of magnanimous champions of the truth when they propose a compromise between Geology and its opponents—a compromise that must have precisely the same elements which would have been required for one between Galileo and the Pope, on the question of the earth's rotation. He who believes that the earth was created 6000 years ago, believes a proposition that stands in the same relation to science that the Ptolemaic Astronomy maintains. Such a doctrine is in no respect more tenable or respectable than that which the Pope sought to establish by the terrors of anathema and imprisonment—that the earth is the center of the solar system. But popular opinion at the present day, while it relegates to lunacy the advocate of the earth's immobility, passes no severer judgment on the denial of the claims of Geology than that of over-caution—a slight leaning to conservatism in matters of science. Every man who is entitled to pronounce an opinion on this subject, knows that the earth is old with an age that 6000 years can measure, it is true, but only as a single step can measure the breadth of a continent. The immense antiquity of the earth is no longer open to question, in any other sense than the tenets of science are always open.

The explanation of these facts it is not

difficult to afford. The hostility which Geology encounters in a vast number of highly cultivated and influential minds is due to its supposed bearings on religious truth, confessedly man's highest interest. Genesis, it is declared, cannot be reconciled with the demands of Geology. But Genesis is no more at variance with Geology than it is with the Copernican system of Astronomy. Has then the Bible lost its power to bless the race, since the foundations of this system were "firmly fixed, no more to move?" Has it not rather found in Astronomy a better instrument for training the mind to the high and reverent thought which it demands than it ever had before? This whole opposition, no matter how worthy the interest in which it is undertaken, is most short-sighted and suicidal. It is the only version which the nineteenth century will allow of the Pope's persecution of Galileo. The ground of controversy is the same, and the results will not be at variance. It should be a matter of profound gratitude to those who receive with an impartial welcome all religious truths, that our two ablest expounders of Geology are men of such devout and reverent minds—Agassiz and Dana, either of whom, were it not for the other, could be written "*facile princeps.*" Agassiz has unfolded with a marvelous intuition the plans of nature in the structure of the animal kingdom; while Dana has written not only the best treatise on Geology yet given to the world, but has in so doing furnished a stronger argument on Natural Theology than Paley ever wrote.

The want of familiarity with Geological conclusions which generally prevails is another cause of the distrust with which they are received. When they meet the ear, they have a paradoxical sound. They are not rejected because they have been weighed in the balance of the understanding and have been found wanting, but simply because, on the ground which they claim for themselves, other and directly opposite beliefs are already established. It might be expected that what we call a liberal education would remedy this defect in all the minds which come under its influence, but we find, on the contrary, that it does not tend to this result. Five or six years of the approved curriculum are devoted to the literature and mythology of certain heathen nations, which flourished before the Christian era; while Geology, Chemistry, and other allied sciences, are "damned with the faint praise" of a dozen superficial lectures.

The remedy for this evil lies with teachers, much more than with any other class. They can bring to the support of Geological truth the same subtle but powerful influence which Astronomy already enjoys, and which is so important an element in its hold upon the popular mind—the influence of early impressions. They can make it as easy for the rising generation to believe that the earth is *old* as that the earth is *round.* The truth demands that they give as much emphasis to one doctrine as to the other; that they devote to the illustration of the *age* of the earth at least a portion of the ingenuity which they now spend upon its *form.* And when they make this attempt they will find materials enough at their service. Every feature of the natural scenery around them, clay-bed, gravel-bank, drifted boulder, hill, valley, crystal, fossil, will be found a willing witness to the earth's venerable antiquity.

Thus a noble science will speedily come to assume its rightful power, and enter upon its beneficent mission of educating the generations of men and asserting the eternal order which has controlled the course, not only of our humble planet, but also of this universal system.

"It seems," said Laura archly, with her finger on the paragraph, "as if Mrs. Jenkins and Mrs. Kirtland thought the rest of Vernon were a set of defective specimens especially designed to teach them wisdom, —just as Miss Lake used to place misspelled and ill-written sentences before us to teach us grammar. But I think the author is right, and that we learn more by looking at the well-written sentences."

PRIMARY INSTRUCTION.

IV.

DESCRIPTIVE TERMS OR QUALITIES OF OBJECTS.

THE special design of these lessons is to exercise comparison and cultivate the power of description. Children trained by a skillful teacher in our Perceptive Exercises are prepared for this class of lessons at eight or nine years of age. In our ungraded schools they may be given to children commencing the study of grammar. The teacher should pursue similar plans, preparatory to using the text-book, upon the subject of adjectives. We should guard against crowding these terms upon the children. Inexperienced or inconsiderate instructors may fall into the habit of attempting too much in one lesson, or commencing such exercises with pupils who are not prepared for them. In either case the opportunity for a real developing lesson will be lost. The primary teacher should at all times be governed in a great measure by the principle that curiosity is the natural incitement of intellect, and remember that this calls for variety.

ORDER OF PRESENTING THE LESSONS.

1. Idea developed.
2. Examples of objects called, possessing the same quality without applying the term.
3. Term given and written upon the board.
4. Test-questions, for the purpose of ascertaining whether all have gained the idea.
5. Examples given, with an application of the term in question.
6. Summary.

METHOD OF DEVELOPING THE IDEA OF TRANSPARENCY.

1. *Idea developed.*—Present a piece of glass and a common school-slate. Place an object behind each, and when all have observed carefully, request them to think, and be ready to tell, what they can say of the glass that they cannot say of the slate. Give several an opportunity of expressing the idea, and repeat the experiment until it is clearly expressed that "we can see through the glass, and cannot see through the slate."

2. *Example.*—Request all to think of something else through which they can see very clearly. It will require, in most instances, some careful questioning to draw from the children that water, air, etc., can be seen through. It is not expected, as a general thing, that the teacher will give the examples, but always by proper questioning will endeavor to draw such ideas from the class. A child rarely thinks of giving *air* as an example. By a little ingenuity we may lead him to think of it. For instance, "There is something in this room that we are looking through now. It is between you and me, and yet I can see you very clearly." In this way the class will have the pleasure of making the discovery, besides having some mental exercise in gaining the idea.

3. *Term given.*—Tell them that because we can see through glass, air, water, alcohol, etc., we say they are *transparent.* The word should be written and spelled until committed to memory.

4. *Test-questions.*—What can we say of the glass that we cannot of the slate? (Can see through it clearly.) What else can we see through clearly? What did I tell you we say of glass, air, water, and alcohol, because we can see through them clearly? How do you spell transparent? If the majority of the class are not able to respond to the test-questions, it will be better to review the first part of the lesson.

5. *Examples.*—Request the class to mention things that are transparent. As the examples are given, the sentences should be expressed in full, and written by the teacher upon the board, to be read in a conversational style by the pupils.

6. *Summary.*—This will consist principally of a hasty review and simultaneous repetition of the leading test-questions.

In a subsequent lesson the idea of opacity may be developed in a similar manner. Children are very fond of having these

lessons. They confer a pleasant variety, and give interesting mental effort, at the same time affording some information.

MANNER OF DEVELOPING THE IDEA OF LIQUIDITY.

1. *Development of Idea.*—Pour from a cup some water in a stream. Again, let the water fall in drops. Request all who saw any difference between the water that was poured out first and that last to raise hands. Repeat the experiment until the majority of the class have observed some difference. After many hands have been raised, request answers to the questions. What difference did you see? When all have observed that in the latter case it fell in *drops*, lead them to express what it did to the paper or floor on which it fell. (Wet it.)

2. *Examples.*—Something else that will form itself into drops and wet.

3. *Term given.*—Tell them that because water, milk, cider, vinegar, etc., will form themselves into drops and wet, they are said to be *liquids*. Word written, read, and spelled, until committed to memory.

4 *Test-questions.*—What did the water do, or how did it fall when poured out last? (Dropped.) Give the sentence to be repeated several times. The water formed itself into drops. What did it do to the paper? (Wet it.) Tell me all you observed about the water. Answer: The water formed itself into drops and wet. This should be committed to memory.

5. *Examples of Liquids.* — Sentences written.

6. *Summary.*—It must not be expected that the answers to the questions will be given at once. It is very often necessary to assist the children in the art of expression after the idea has been gained. A lesson of this kind, properly developed, was never given without actual labor on the part of the teacher. We must sometimes labor to interest in order to instruct. It requires patience and perseverance as well as energy and tact to succeed well in this unfolding process. A faithful teacher will, however, be fully repaid, after an exercise of continued patience, by witnessing the growing interest, the quickened perception, the aptness, sharpness, and progress in the art of expression on the part of the children. The same general rules which have been given before should be followed in working out these lessons. The attention of all should be gained. The younger or more backward ones should be tested first, so that the teacher may ascertain whether the illustrations are sufficiently simple, etc. After an idea has been gained, much repetition is necessary to give practice in the use of language and for the cultivation of the memory. Proper attention should be paid to reading, spelling, to the capital letter and period of each sentence as written upon the board. If it is a class beginning to study grammar, the children may be led to see that describing words are called adjectives.

MANNER OF DEVELOPING THE IDEA OF SOLUBILITY.

1. *Development of Idea.*—Present two glasses, both containing water. After gaining the attention of all, place in one some sugar—in the other, some sand. When the idea has been brought out by comparison that the sugar dissolves, lead the class to think of something else in which the sugar would dissolve—tea, milk, cider, etc. What are they all called? (Liquids.) What will sugar dissolve in? (In a liquid.)

2. *Examples.*—Mention other things that would dissolve in a liquid.

3. *Term given*, etc.

In the summary, the sentences, "We say sugar is soluble because it will dissolve in a liquid," "We say salt is soluble," etc., may be given to be repeated simultaneously until committed to memory.

IDEA OF POROSITY DEVELOPED.

1. *Development.* — Present a piece of sponge and a piece of glass. Allow the class to examine them and say what difference they observe in the surfaces? What do they observe about the sponge that they do not about the glass? When the idea has been expressed that the sponge is full of little holes, tell them that the little holes are called *pores*.

2. *Examples*, etc.

We find upon experiment that fifteen or twenty minutes daily for a fortnight may be spent upon exercises similar to the fore-

going hastily-prepared sketches, without loss of interest. After a change of subject we frequently select some object which will afford an opportunity for a review of some previous lesson, and give other qualities suitable to be brought out. For example: Loaf sugar is soluble, loaf sugar is brittle, loaf sugar is rough; water is transparent, water is a liquid, water is colorless and tasteless.

SCIENCE AND THE SPIRITS.

THE seeming indifference with which pseudo "spiritual phenomena" are regarded by scientific men is sometimes alluded to in terms of reproach, and the charge is not unfrequently made that they decline investigation. The result of "an attempt to apply to the 'phenomena' those methods of inquiry which are found available in dealing with natural truth," is given in the *London Reader*. The article is in substance as here given.

We did not go, says the writer, as entire unbelievers in the facts. On the contrary, we thought it probable that some physical principle, not evident to the spiritualists themselves, might underlie their manifestations. Extraordinary effects are produced by the accumulation of small impulses. Galileo set a heavy pendulum in motion by the well-timed puff of his breath. Ellicot set one clock going by the ticks of another, even when the two clocks were separated by a wall. Preconceived notions can, moreover, vitiate, to an extraordinary degree, the testimony of even veracious persons. Hence our desire to witness those extraordinary phenomena, the existence of which seemed placed beyond doubt by the known veracity of those who had witnessed and described them. The meeting took place at a private residence. Our host, his intelligent wife, and a gentleman whom we shall call Mr. M., were in the house when we arrived. We were informed that the "medium" had not yet made her appearance; that she was sensitive, and might resent suspicion. It was therefore requested that we should examine the tables and chairs before her arrival, in order to assure ourselves that there was no trickery in the furniture. We did so; and then first learned that our hospitable host had arranged that the *séance* should be a dinner-party. This was an unusual form of investigation; but we accepted it, as one of the accidents of the occasion.

The "medium" arrived—a delicate-looking young lady, who appeared to have suffered much from ill health. We took her to dinner, and sat close beside her. Facts were absent for a considerable time, a series of very wonderful narrative supplying their place. The duty of belief on testimony was frequently insisted on. Mr. M. appeared to be a chosen spiritual agent, and told us many surprising things. He affirmed that, when he took a pen in his hand, an influence ran from his shoulder downwards, and impelled him to write oracular sentences. We listened for a time, offering no observation. "And now," continued Mr. M., "this power has so risen as to reveal to me the thoughts of others. Only this morning, I told a friend what he was thinking of, and what he intended to do during the day." Here, at length, was something tangible—an alleged capacity to divine one's thoughts, which could be at once tested. We responded thus: "If you wish to win an apostle to your cause, and to have your principles proclaimed from the housetop, *state what we are now thinking of.*" Mr. M. reddened, and did *not* tell us our thought.

Some time previously we had visited Baron Reichenbach in Vienna, and we now asked the young lady whether she could see any of the curious things which he describes—the light emitted by crystals, for example. Here is the conversation which followed, as extracted from our notes, written on the day following the *séance.*

Medium.—Oh, yes; but I see light around all bodies.

Writer.—Even in perfect darkness?

Medium.—Yes; I see luminous atmospheres round all people. The atmosphere which surrounds Mr. D. would fill this room with light.

Writer.—You are aware of the effects ascribed by Baron Reichenbach to magnets?

Medium.—Yes; but a magnet makes me terribly ill.

Writer.—Am I to understand that, if this room were perfectly dark, you could tell whether it contained a magnet without being informed of the fact?

Medium.—I should know of its presence on entering the room.

Writer.—How?

Medium.—I should be rendered instantly ill?

Writer.—How do you feel to-day?

Medium.—Particularly well. I have not been so well for months.

Writer.—Then, may I ask you to state whether there is, at the present moment, a magnet in our possession?

The young lady looked at us, blushed, and stammered, "No; I am not *en rapport* with you."

We sat at her right hand, and a left-hand pocket, within six inches of her person, contained a magnet.

Our host here deprecated discussion, as it "exhausted the medium." The wonderful narratives were resumed; but we had narratives of our own, quite as wonderful. The spirits indeed seemed clumsy vulgarians compared with those with which our own researches had made us familiar. We therefore began to match the wonders which they related by other wonders. A lady present discoursed of spiritual atmospheres, which she could see as beautiful colors, when she closed her eyes. We professed ourselves able to see similar colors, and, more than that, to be able to see *the interior of our own eyes.* The medium affirmed that she could see actual waves of light coming from the sun. We retorted that we could tell the exact number of waves emitted in a second, from the red table-cover before us, and also their exact length. The medium spoke of the performances of the spirits on musical instruments. We said that such performance was gross, in comparison with a kind of music which had been discovered some time previously by a scientific man. Standing at a distance of twenty feet from a jet of gas, he could command the flame to emit a melodious note; it would obey, and continue its song for hours. So loud was the music emitted by the gas-flame, that it might be heard by an assembly of a thousand people. These were acknowledged to be as great marvels as any of those of spiritdom. The spirits were then consulted, and we were pronounced to be *a first-class medium.*

During this conversation a low and oft-repeated knocking was heard under the table. These were the spirits' knocks. We were informed that one knock, in answer to a question, meant "No;" that two knocks meant "Not yet;" and that three knocks meant "Yes." In answer to the question, whether we were a medium, the response was three brisk and vigorous knocks. We noticed that the knocks issued from a particular locality, and therefore requested the spirits to be good enough to answer from another corner of the table. *They did not do so;* but we were assured that they would do it, and much more, by and by. The knocks continuing, we turned a wine-glass upside down, and placed an ear upon it, as upon a stethoscope. The spirits seemed disconcerted by the act; they lost their playfulness, and did not quite recover it for a considerable time.

Somewhat weary of the proceedings, we once threw ourselves back against our chair and gazed listlessly out of the window. While thus engaged the table was rudely pushed. Attention was drawn to the wine, still oscillating in the glasses, and we were asked whether that was not convincing. We readily granted the fact of motion, and began to feel the delicacy of our position. There were five pairs of arms upon the table, and five pairs of legs under it; but how were we, without offence, to express the conviction which we really entertained? To ward off the difficulty, we again turned a wine-glass upside down, and rested the ear upon it. The rim of the glass was not level, and the hair on touching it caused it to vibrate, and produce a peculiar buzzing sound. A perfectly candid and warm-hearted old gentle

man at the opposite side of the table, whom we shall call G., drew attention to the sound, and expressed his entire belief that it was spiritual. We, however, informed him that it was the moving hair, acting on the glass, that produced the rattle. The explanation was not well received; and Mr. M., in a tone of severe pleasantry, demanded whether it was the hair that had moved the table. The promptness of our negative probably satisfied him that our notion was a very different one.

The superhuman power of the spirits was next dwelt upon. The strength of man, it was stated, was unavailing in opposition to theirs. No human power could prevent the table from moving when they pulled it. During the evening this pulling of the table occurred, or rather was attempted, three times. Twice the table moved when our attention was withdrawn from it; on a third occasion, we tried whether the act could be provoked, by an assumed air of inattention. Grasping the table firmly between our knees, we threw ourselves back in the chair, and waited, with eyes fixed on vacancy, for the pull. It came. For a couple of seconds it was pull spirit, pull muscle; the muscle, however, prevailed, and the table remained at rest. Up to the present moment, this interesting fact is known only to the particular spirit in question, and ourselves.

A species of mental scene-painting, with which our own pursuits had long rendered us familiar, was employed to figure the changes and distribution of spiritual power. The spirits were provided with atmospheres, which combined with and interpenetrated each other, considerable ingenuity being shown in demonstrating the necessity of *time* in effecting the adjustment of the atmospheres. In fact, just as in science, the senses, time, and space constituted the conditions of the phenomena. A rearrangement of our positions was proposed and carried out; soon afterwards our attention was drawn to a scarcely sensible vibration of the upper part of the table. Several persons were leaning on the table at the time, and we asked permission to touch the medium's hand. "Oh, I know I tremble," was her reply. Throwing one leg across the other, we accidentally nipped a muscle, and produced thereby an involuntary vibration of the free leg. This vibration, we knew, must be communicated to the floor, and thence to the chairs of all present. We therefore intentionally promoted it. Our attention was promptly drawn to the motion; and a gentleman beside us, whose value as a witness we were particularly desirous to test, expressed his belief that it was out of the compass of human power to produce so strange a tremor. "I believe," he added earnestly, "that it is entirely the spirits' work." "So do I," added, with heat, the candid and warm-hearted old gentleman G. "Why, sir," he continued, "I feel them at this moment shaking my chair." We stopped the motion of the leg. "Now, sir," G. exclaimed, "they are gone." We began again, and G. once more ejaculated. We could, however, notice that there were doubters present, who did not quite know what to think of the manifestations. We saw their perplexity; and, as we had sufficient reason to believe that the disclosure of the secret would simply provoke anger, we kept it to ourselves.

Again, a period of conversation intervened, during which the spirits became animated. The evening was confessedly a dull one, but matters appeared to brighten towards its close. The spirits were requested to spell the name by which the writer is known in the spiritual world. Our host commenced repeating the alphabet, and, when he reached the letter "P," a knock was heard. He began again, and the spirits knocked at the letter "O." We were puzzled, but waited for the *dénouement*. The next letter knocked down was "E." We laughed, and remarked that the spirits were going to make a poet of us. Admonished for our levity, we were informed that the frame of mind proper for the occasion ought to have been superinduced by a perusal of the Bible, immediately before the *séance*. The spelling, however, went on, and sure enough we came out a poet. But matters did not end here. Our host continued his repetition of the alphabet, and the next letter of the name proved to be "O." Here was manifestly an unfinished word, and the spirits were apparently in their most communi-

cative mood. The knocks came from under the table, but no person present evinced the slightest desire to look under it. We asked whether we might go underneath; the permission was granted, so we crept under the table. Some of those present tittered; but the candid G. exclaimed, "He has a right to look into the very dregs of it, to convince himself." Having pretty well assured ourselves that no sound could be produced under the table without its origin being revealed, we requested our host to continue his questions. He did so, but in vain. He adopted a tone of tender entreaty; but the "dear spirits" had become dumb dogs, and refused to be entreated. We continued under that table for at least a quarter of an hour, after which, with a feeling of despair, as regards the prospects of humanity, which we had never before experienced, we regained our chair. Once there, the spirits resumed their loquacity, and dubbed us "The Poet of Science."

This, then, is the result of an attempt, made by a scientific man, to apply to spiritual phenomena the only methods of inquiry at the disposal of human beings. It is not encouraging; and for this reason: The present promoters of spiritual phenomena divide themselves into two classes, one of which needs no demonstration, while the other is beyond the reach of proof. The victims like to believe, and they do not like to be undeceived. Science is perfectly powerless in the presence of this frame of mind. It is, moreover, a state perfectly compatible with extreme intellectual subtlety, and a capacity for devising hypotheses, which only require the hardihood engendered by strong conviction, or by callous mendacity, to render them impregnable. The logical feebleness of science is not sufficiently borne in mind. It keeps down the weed of superstition, not by logic, but by slowly rendering the mental soil unfit for its cultivation. When science appeals to uniform experience, the spiritualist will retort, "How do you know that a uniform experience will continue uniform? You tell me that the sun has risen for five thousand years: that is no proof that it will rise to-morrow; within the next twelve hours it may be extinguished by the breath of the Almighty." Taking this ground, a man may maintain the story of "Jack and the Beanstalk" in the face of all the science of the age. You urge, in vain, that science has given us all the knowledge of the universe which we now possess; while spiritualism has, up to the present time, added nothing to that knowledge. What is the world of fact to a man, or a woman, under the influence of the vapor of sulphuric ether? Just as much as it is to a weak brain, intoxicated with the fumes of spiritualism. The drugged soul is beyond the reach of reason. It is in vain that impostors are exposed, and the special Demon cast out. He has but slightly to change his shape, return to his house, and find it "empty, swept, and garnished."

MEDICO-PSYCHOLOGICAL VIEWS OF EDUCATION.

TO understand thoroughly how instruction can be imparted with advantage to all kinds of intellects requires the knowledge of medico-psychological principles. Human intelligence is the manifestation of a spiritual principle through organs which have life and matter for attribute. Like any other organ, the properly exercised brain acquires strength, and its faculties become more extensive. Our aim should be, consequently, to give to the brain itself all the material and moral conditions requisite for a full and complete development. If ever society is to enjoy a state of perfect civilization, it will be when two conditions of material and moral development exist—when all the modifications obtained by the progress of science and the arts will have spared to man those toils that stupefy his faculties, and when moral and external circumstances will be favorable to his education, and shall have cast out ignorance, misery, and vice.

The great art of the teacher is, as far as

practicable, to bring the effect of such advantages to bear upon his pupils. Let him never attempt to repel or compress natural talents in their first shooting forth, but rather to support and direct them so as to keep the balance between body and mind. If a child who possesses ordinary intellectual power, enjoys good health, his teacher must only be to him what the child would later be to himself, a constant help for volition to overcome difficulties. If a pupil is not placed in favorable circumstances, either mentally or bodily, time and hygienic care must bring their own remedy; kindness and encouragement are the best means to bring him to a comparatively advanced state of instruction. We know only one case in which the teacher must resort to severity, and to corporeal punishment, for the welfare of children; it is when he meets with *perverted will and feelings* resisting kindness and reprehension. As Superintendent of a State Lunatic Asylum, the writer has had cases of mania and homicidal insanity which were caused by undue indulgence at home. In the case of many selfish and vicious children, the only way to save them from misery, crime and insanity, is to prepare them for the necessities, antagonisms, competitions, and individual absorptions, and restrictions so common in life.

The object of education is to make virtuous men and good citizens; therefore, besides science, children must acquire moral and social qualities. For that aim, the greatest power is *self-government.* Every day we see human skill and perseverance conquer difficulties in the material and natural order of nature. In one sense it may be said that we modify time and space, as well as the minerals, vegetables and animals that surround us. How could it be that we should have been created without power over our faculties? Will you illustrate that power over children? Then show confidence to the diffident pupil, encourage him in his attempts, make him believe in his ultimate success. Presumed aptitudes have often been the cause of acquired talents. External causes may act also by relative action; for instance, material cleanliness of the body has something to do with the purity of the thoughts, and elevation of the mind,—the amelioration of the individual leads to that of the family, and even to that of a community. We are inclined to think that man might in this way influence his own destiny and that of his fellow-citizens.

Human intelligence may be developed by two methods—by classical learning and the mathematical studies; good education and instruction require both. Why should we spend so much time to acquire ancient and obsolete languages? Because the writings of Greek and Latin philosophers abound with literary and moral beauties, that give the mind the taste for what is really good and beautiful. Mathematical studies form and discipline the judgment. But are we always to act on demonstrated principles? The study of difficult problems of social economy gives us no light on moral principles. Mere facts studied in the history of nations would lead us to strange errors, if not associated with the principles of justice. Scientifical and literary studies are necessary to all stations of life, and at the same time possible to every youth. By a natural development of the mental faculties, literary studies are the best adapted to those of the age from twelve to sixteen, and from that age the mind is disposed and able to grasp with abstract truths of the highest branches of science. According to our views, and in relation to the unfolding of the judgment of pupils, we prefer the analytical methods to the synthetical. To conclude, we say to all concerned in education: Let your instruction, either classical or scientifical, be at the same time of a moral character, having especial regard to all human obligations.

[In adverting to hygienic principles in connection with mental development, our contributor broaches a subject which is too little regarded in all educational systems, and which we would gladly see treated with more amplification. The most recent physiological and psychologial developments indicate that the mental faculties are not merely sustained by the vital or animal basis, but are the incidents, the inevitable manifestations of the vital functions. The interdependence of the mind and the body has never been fully recognized.—Ed.]

PETROLEUM.

II.

THE presence of Petroleum in any particular spot cannot be definitely ascertained by surface indications. It is true that gas-springs, or oil floating on the surface of creeks, or bituminous shales cropping out, are in a measure presumptive evidence of adjacent petroleum. But that such evidences are not necessary is proved by the fact, that wells have frequently been sunk and proved successful, where not a single surface indication existed. The only means of determining the district in which to sink the well, is to examine the character of the geological formations. If these belong to the oil-bearing-group, a well may be sunk, but it is merely a chance whether or not the oil will be struck, since it is not found spread out in sheets, or equally distributed in horizontal strata, but only in cavities, concerning whose origin we have spoken in the first part of this paper.

Two or three of these cavities are frequently connected with each other, there being a single large one, of which the others are dependencies. In every cavity we find gas, oil and water placed according to their specific gravities. If the well enter at the top of the cavity, the gas rushes out with great force, ejecting whatever water may have collected in the boring, and frequently forcing out, at the same time, the drill to a considerable distance. It is necessary, then, to commence pumping the oil immediately, lest it become much mixed with the water, which flows down from the sides of the boring. If the well should enter further down, and strike the oil, this, if the gas be of sufficient tension, will be thrown out with great force to a distance sometimes of thirty or forty feet, so that frequently large quantities are wasted from lack of preparation to receive it. This flow continues until the gas has reached the mouth of the tube, or has lost its tension; after which it is necessary to resort to the pump to keep up the supply of oil. Should the boring strike still lower down, and enter the water, no oil can be obtained until the water has been entirely removed. Sometimes this operation is very tedious, but is frequently rewarded with great pecuniary success. The Shattuck well, on the Little Kanawha, required constant draining with a steam-pump for two weeks, yet yielded very abundantly afterward.

A curious phenomenon, sometimes seen, is that of the intermitting well. Such wells often become exhausted, but after a brief period are replenished, and resume their flow; this alternate exhaustion and replenishing may continue indefinitely. Prof. Evans explains this, by supposing that the cavities are connected with other reservoirs by slight channels, whose capacity for replenishing is less than that of the tube for exhaustion. One well of this character expels about a barrel of oil at intervals of half an hour, and then stops. After each stoppage it is only necessary to pump out a little water, when the flow is resumed. The number of intervals varies in different wells from four or five per day, to four or five per hour. Sometimes wells have two periods depending upon the escape of gas; one of variation in the flow, and another of cessation. These wells are of the class termed "flowing." In them the gases possess sufficient tension to force the oil to the surface without assistance. In most cases, however, the gas is so small in amount, or possesses such slight tension, as to require the pump to bring up the oil. Some of these "pumping" wells also manifest the phenomenon of intermitting, probably because some neighboring wells of greater power drain them through communicating channels. From the observations of Prof. Evans it follows, that the tension of the gas is the especial agent causing the oil to flow; and there is no reason to believe, as some have supposed, that the oil is raised by the pressure of a column of water, whose fountain is higher than the top of the boring.

Oil and artesian wells are bored in the same manner. In Pennsylvania, where the oil-producing rock is at a considerable

distance below the surface, the operation is more difficult than in other districts. The process in that region is somewhat as follows: The surface-machinery, such as a derrick and a small steam-engine of about six-horse-power, being provided, the driller drives a pipe, six inches in diameter, and made of iron one inch thick, through clay and gravel, to the depth of about fifty feet, when the hard rock is reached. The pipe is then cleaned out, and a drill, about two and a half inches in diameter, attached to a temper-screw, is introduced, by which eight or ten feet per day are bored through slate, to the depth of perhaps one hundred feet, when the "first sand-rock" is reached. After boring from twenty-five to fifty feet more, the drill reaches the "second sand-rock," in which wells are frequently found. At a greater depth of fifty or seventy-five feet lies the "third sand-rock," in which the great wells are found. When this formation is reached, the well is tested for oil by pumping. If no oil appear, the well is abandoned, or bored deeper: this matter depending very much upon the obstinacy of the speculator. If oil be reached, the well is immediately enlarged by a "rimmer." During the boring, springs of water are frequently opened, and therefore, as the influx of water would materially add to the expense of procuring the oil, a bag filled with flax-seed is driven down, outside of the oil-tube, below the springs. The seed becoming moistened, swells, and effectually prevents the flow of any water into the cavity.

The cost of sinking a single well is much greater than is generally supposed. To bore a well six hundred feet deep requires, at the lowest estimate, $6,500. Many companies are organized, whose working capital does not exceed $10,000. If their first boring should prove unsuccessful, there would be scarcely sufficient left to sink a second; although the expense would be hardly more than one-half that required for the first. It is, therefore, unwise for a company to begin operations with less than thirty thousand dollars of cash capital, since it may be necessary to make several borings before meeting with success. Even in the most productive regions, it is but a chance whether oil will be found. One case now occurs to our mind, in which a well was sunk, and proving barren, was abandoned. It was sold for a mere trifle, to an enterprising German, who, while "rimming" it, opened a cavity which proved to be very rich.

The transportation of the oil from the wells to a market, is now a business of extreme importance and profit. Every effort is made to increase the facilities, and expedients of the most gigantic character are employed. From the Pennsylvania wells to the termini of the Oil Creek, twelve miles, and the Atlantic and Great Western railroads, seven miles, pipes for conveying the oil are to be laid as gas-pipes are laid in our cities. By this means, it is believed, ten thousand barrels of oil per day can be delivered at the depots with less expense than is incurred under the present system of cartage.

Petroleum in its crude state is, as we have seen, made up of various solid and liquid hydro-carbons, so that it is unfit for use. Hence it is necessary to refine it by distillation. This process is too tedious and technical to be explained here. The average cost of refining petroleum is about five cents per gallon, besides loss, which ranges from 10 to 40 per cent, according to the oil. Among the lightest products is the remarkably inflammable substance, benzine, or benzole. This is a solid at 40° F., but boils at 140° F., and is therefore among the earlier products of distillation. It is an excellent substitute for camphene, and is used for cleaning wool and gloves, as well as for dissolving caoutchouc, and other gums.

When benzole is slowly added to fuming nitric acid, and gently heated, there is very considerable action. On dilution a heavy oil separates, which may be distilled unaltered at 415° F., and is known as nitro-benzole. This substance has a sweetish taste, and an odor resembling the oil of bitter almonds. It is used by confectioners and perfumers under the name of *essence of mirbane*, or bitter almonds. A strange peculiarity of this compound is its effect as a poison. About two years ago a gentleman of Philadelphia published an interesting paper on this subject in the *Journal of Pharmacy*, in which he stated that nitro-benzole, when given in proper doses, would

not manifest its poisonous qualities for a week or more; but at the end of this time the patient would be seized by a terrible fever, from which it would be barely possible to recover. The strangest part of the statement is, that a *post-mortem* examination shows no nitro-benzole present, it having been entirely eliminated or converted into aniline, which is itself a constituent of the human body. In this substance, then, we are likely to find the analogue of those mysterious poisons, said to have been administered by professional murderers in the old Roman and Grecian empires. Society, and wives with jealous or dissatisfied husbands, may, however, have the satisfaction of knowing that few persons are likely to be removed by this means, as, even in the hands of an experienced person, its preparation is attended with some danger, and the administration of an excessive dose is apt to bring on unmistakable symptoms immediately.

Another product of distillation is naphtha, which is now used as a substitute for turpentine. Kerosene oil, known throughout the world as an illuminator, is a product ranging from 58° to 43° (Baume's scale). Another product is paraffine, as termed from the slight affinity it possesses for other substances. It is white and waxy, resembling spermaceti, for which, indeed, it is frequently used as a substitute. It occurs in great quantities at Oil Creek, Penn., where it frequently chokes up valuable wells. Neither acids nor alkalies have any effect upon it, so that, in order to reopen the well, it is necessary to inject steam or condensed air, by which means, as paraffine melts at 112° F., it is readily removed. Paraffine is used for lubricating, and, mixed with linseed oil, for painting. The lowest or waste products of the distillation are used for the manufacture of illuminating gas. The St. Nicholas Hotel of New York city is lighted by gas from this source, and it is said that the annual expense is $10,000 less than if coal-gas were used.

No substance known gives so many useful products as petroleum. From benzole we are enabled to procure aniline, from which many of the most beautiful colors known have been produced. A large establishment for the manufacture of dyes from the residuum, or waste products of distillation, has been built in connection with the Humboldt Refinery, in the Oil Creek region. The process there employed is not known; though, as the residuum is not a very profitable source of aniline, it is believed that coal-tar is used in combination. The delicate and popular colors, Humboldt, Azuriena, Mauve, Magenta, Roseine, and Purpurine may all be derived from the petroleum "waste." The investigation of these colors now occupies the attention of many leading scientific men, so that new dyes are continually discovered. Dr. Hoffman, of London, has just given an interesting history of these colors, and terms their base, *Phenyltoluylamine.*

Petroleum is now used to a considerable extent in wool-spinning, and is said to have a beneficial effect on the wool, and on the teeth of the machine. Paraffine is used as a substitute for spermaceti, in the manufacture of candles. These are as hard as lead, give a beautiful light, and preserve well in any climate. Paraffine oil is also used by curriers, and is preferred by them, as it renders the leather tougher and better than when dressed with fish-oil. Asphaltum, one of the crude products, is a valuable constituent of several common varnishes. The crude oil itself is an excellent remedy for many cutaneous eruptions, and is now much used in combination with soap. It possesses considerable virtue as a purgative. Not long ago an army surgeon discovered that it was as useful in suppuration as water is in inflammation. Of late, petroleum has been canonized in the Roman Catholic Church, and may now be used instead of olive-oil, in case the latter cannot be procured. Various attempts have been made to use petroleum instead of coal, in ocean traveling; but thus far all have proved unsuccessful, as petroleum is too expensive, and besides, would occupy very nearly as much room as coal. It is confidently expected, however, that means will yet be found by which it may be used so economically as entirely to supersede coal in ocean-traveling.

The oil produced in Pennsylvania last year was sold at the wells for $56,000,000,

A. Lincoln

Published by
Schermerhorn, Bancroft & Co. New York & Boston

while the iron and coal produced only $51,000,000. The amount sent abroad is continually increasing. The exports of 1864 amounted to 27,104,845 gallons, against 8,065,902 gallons in 1862, and 23,413,466 in 1863. The increase in the home-trade has been most remarkable: so great, indeed, that, though a few years ago the oil could be procured for twenty-five cents per barrel, it now commands about twenty dollars in New York. It has entirely supplanted all other means of illumination throughout the country. Many leading men, well informed concerning the oil regions, believe that the yield during this year will be far inferior to that of last year, unless new territory is opened up. There is, however, little danger of the supply being cut off, since, as we have seen, the oil-producing region is of vast extent.

During a year or two after the introduction of petroleum oils to the public as illuminating agents, explosions frequently occurred, resulting from imperfect separation of the naphtha and benzine. To protect against such explosions all oil must now pass through the hands of inspectors before it can even find a purchaser. No accidents have occurred from the use of tested oils for illuminating purposes.

The effect of the oil discovery has been very remarkable. In the oil-regions cities have sprung up with unexampled rapidity, though the buildings are not of the most substantial character. Men, who, but a very few years ago, were in the very depths of poverty, are now possessed of great wealth: farms, which lately could not be sold for the taxes, now command a thousand dollars per acre. Many curious and ludicrous incidents might be given respecting the petroleum millionaires, but our space forbids it. The oil is likely to prove a most important source of revenue to the government. One firm, engaged in refining at Oil Creek, paid $1,200,000 of tax last year.

It would be improper to close this article without giving a word of warning to those who may purpose entering into oil speculations. The business cannot fail if properly begun: but no one should take stock in any company until he has first consulted with some well-informed friend, who can give him impartial advice. As was the case during the California excitement of 1848–9, an immense number of companies have sprung up, with flaring prospectus, and promising immense profits. Many of these are *bona fide;* but, from the nature of the case, many others are not. Many of the latter have valuable lands, and if worked on an honest basis would prove immensely profitable; but, as frequently managed, they prove profitable only until all the stock has been taken. After this they most unaccountably become worthless, and remain so for some time, until the stock has fallen very far below par, when the small shareholders, fearing they may lose everything, throw their stock into the market, where it is bought up by the few capitalists, who own the greater part of the shares. Then the concern becomes profitable as suddenly as it before became unprofitable. In this way the wealthy few gain everything, while the many poor are hopelessly wrecked.

THE EGG A MINIATURE UNIVERSE.

[The following remarkable passage occurs in Prof. Agassiz's "Methods of Study in Natural History."]

One can hardly conceive the beauty of the egg as seen through the microscope at this period of its growth, when the whole yolk is divided, with the dark granules on one side; while the other side, where the transparent halo of the vesicle is seen, is brilliant with light. With the growth of the egg these granules enlarge, become more distinct, and, under the microscope, some of them appear to be hollow. They are not round in form, but rather irregular, and, under the effect of light, they are exceedingly brilliant. Presently, instead of being scattered equally over the space they occupy, they form clusters,—constellations,

as it were,—and between these clusters are clear spaces, produced by the separation of the albumen from the oil. At this period of its growth there is a wonderful resemblance between the appearance of the egg, as seen under the microscope, and the firmament with the celestial bodies. The little clusters, or constellations are equally divided. Here and there they are two and two, like double stars, or sometimes in threes, or fives, or in sevens, recalling the Pleiades; and the clear albuminous tracts between are like the empty spaces separating the stars. This is simply true, that such is the actual appearance of the yolk at this time; and the idea cannot but suggest itself to the mind, that the thoughts which have been embodied in the universe, are recalled here within the little egg, presenting a miniature diagram of the firmament. This is one of the first changes of the yolk, ending by forming regular clusters, with a sort of network of albumen between, and then this phase of the growth is complete.

THE ICE-FLOWER.

[When the rays from an electric lamp are made to pass through ice—"the ice appears to resolve itself into stars, each one possessing six rays, each one resembling a beautiful flower of six petals."—*Heat considered as a Mode of Motion, by John Tyndall, F.R.S.*]

Within the ice,
In strange device,
A sleeping beauty, I
Thy coming wait,
At happy date,
To bring my destiny.

When through my frame
The electric flame
Its radiant pulses sends,
I rise from death;
Thy fervent breath
My glacier fetters rends.

To nature's lock
Which guards the block
Of ice, thy key applied,
My soul sets free,
Which turns to thee
In passion's melting tide.

I pant for you
At thirty-two
By *Fahrenheit* displayed;
Or, should prevail
Another scale,
At zero, *Centigrade.*

In pretty strife,
To start to life
My waking atoms stir;
Their motions fine
To thee incline,
My heart's thermometer.

Folded in frost
In ice-depths lost,
I droop in cheerless night;
Under thy glow
My petals blow,
Ecstatic with delight.

No heavenly star
That shines afar
With my six rays can vie;
The hexagon
Which you have won
Transcends geometry.

Imprisoned here,
With frozen tear
I weep my frigid fate:
Dissolved by you,
In raptures new
May I ne'er regelate.

Then come, my love,
Your powers prove,
Let all your radiance shine;
For evermore
On alp and shore,
I'll be your Valentine.

London Reader, to Prof. TYNDALL, for Feb. 14th

AMERICAN
EDUCATIONAL MONTHLY.

APRIL, 1865.

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ENTERED according to Act of Congress,—significant words, these. The book in which they are seen may be crowded with small type, a little paper-covered "cheap edition, or an "octavo, cloth, gilt," but they are conspicuous in an honorable place,—an entire page is devoted to them. They are a talisman causing covetous publishers to drop the volume more summarily than even the "gentle reader" and "discriminating public" dispose of it. The simple statement of a frequently recurring fact, these words have the effect of a decree, compelling many a hard-working compiler to invert chapters and transpose sentences, and to put black dominos on the beautiful thoughts, shackles on the strong ones, that he dare not appropriate in their freshness and freedom.

Toiling quillwright, you are doing a work of supererogation! You want that chapter, for your own book? Take it. "Copyrighted!" Ah, there is where the mistake is made. The prescribed entering of a titlepage "in the clerk's office" does not satisfy the statute. Various points are to be regarded.

The author, only, is entitled to exclusive copyright. The publisher, as such, has legally no more claim to the privilege than any journeyman printer or the errand-boy of a printing-office. The author is the one in whose behalf the statute was enacted. He alone can act in the matter. He must have the titlepage recorded, "entered—in the district court," before the publication of his book, which, be it observed, too, must be published within a year from the time when the title was registered. If he wishes to transfer his interest in the publication to his publisher or any other person, he must do so in a manner closely resembling the conveyance of real estate. The assignment must be duly witnessed and recorded. Although an author may receive liberal compensation from the publisher for his manuscript, he does not thereby waive or impair his peculiar privilege.

It will thus be correctly inferred, that in cases where the names of publishers appear on the record, the copyright is not an exclusive possession of any one. If such publishers are not also the authors of their books, any person may republish, in defiance of the futile warning. We offer no suppositive illustrations. Take facts. The great philological work,—the literary wonder-of-the-world,—is published by Messrs. Merriam & Co., yet their name is not thus misplaced. Noah Webster was the one who secured the legal right now vested in his heirs or assignees. But Messrs. Tickner & Fields, publishers of the "Atlantic Monthly," containing matter which we assume that they have not written,—"enter—according to Act of Congress." They have entered the clerk's office, and, although since the printing and vending of their work, even their contributors would find it useless to approach, yet they have failed in securing exclusive rights, and the door of publication is open to every editor in the land.

Further measures are necessary, to secure valid title, such as the depositing of copies of the published work, within a specified time, at certain offices and departments,—making, together, a system of procedure not generally understood, and warranting the affirmation, based not enterely on inference, that a large proportion of the nominal copyrights are invalid and worthless.

Of course, no reputable publisher or honorable man will make unworthy application of the peculiarities brought to notice. They are presented for the consideration alike of author and publisher, that neither one may rely upon erroneous claims and insecure possessions.

In a collateral matter some of our con

tributors are immediately concerned. They sometimes find their published articles in a guise not at all favorable to recognition. Various reasons concur making modification of manuscripts sometimes indispensable. Sometimes a writer gives us too much—uses more words than his ideas call for; or, on an interesting subject he does not say enough. Often we have some of his ideas, or perhaps even some of his expressions, in an article where they can not so well be dispensed with. Unimportant changes are frequently made for mere typographical expediency.

We advert to this for the purpose of assuring our contributors that such alterations will not always imply defects of manuscripts, and that whenever modification or emendation is required, we wish not to be considered uncourteous or unmindful of the rights of authors.

Brains *versus* Text-Books.

An artist, admiring the work of a successful professional brother, asked: "With what do you mix your colors to produce such fine effects? "With brains, sir," was the answer. When we hear teachers anxiously asking each other what books they use to advance their pupils in knowledge, we are reminded of this anecdote. If the teacher is true to himself and to his calling, it matters little what text-books may be in the hands of his classes. The successful teacher must prepare himself for every recitation. He must never appear before his class without being "master of the situation." Should circumstances occasionally rob him of the time necessary for imbuing himself with the essence of the subject, he might better defer the recitation.

The teacher will seldom find a perfect text-book. And he should always be ready to point out the errors in each day's lesson. He should be able to cite different authorities when the text-books disagree upon certain questions. Too many of our school-books are imperfect in many particulars. But, if the teacher use "Brains" properly, he can teach as thorough lessons, and make more enduring impressions upon the mind of his pupils, than he could were all the text-books invariably perfect while he himself was at all deficient. No teacher has a moral right to adopt, and to allow his classes to adopt, unquestioned, the assertions and opinions of school-book makers.

Public Exercises in Schools.

As commonly conducted, we deprecate "school exhibitions" and "school examinations." And yet we are disposed to advocate judicious public exercises, which will call in such parents and friends of the pupils as have not enough enthusiasm or interest to visit the school upon ordinary occasions. In making preparation for these special occasions there cannot be too much care to avoid the abuses of the so-called "exhibitions." Our advice to the teacher is: avoid all desire to "show off" favorite pupils; do not try to make a "sensation." Strive against a "dressed-up," "holiday" display of the persons and attainments of your pupils. Do not go out of your regular course of instruction. Let your visitors see how well your pupils can do what belongs to your daily school duties. Be always so well prepared that you could give creditable public exercises any day, even if unexpectedly required to do so. Avoid waste of time in preparing exercises which will not yield a substantial profit to the minds of your pupils. We know certain "seminaries," as well as public schools, in which the regular exercises of the classes are entirely broken up for weeks before the end of the term, by preparations for "a grand display." Nothing can be more dishonest on the part of the teachers, and damaging to the best interests of the pupils.

Let it be understood that there will be monthly, or semi-monthly public exercises. Let them consist of regular reviews of the classes—not too many of the classes on one day, or they will become tedious. Then

let there be read a school-paper, made up of the better "compositions" of the pupils, well spiced with pleasant, well-told incidents of the school and neighborhood. Two or three of the best readers should read this "School-Times," or "Bulletin." Rotation should be observed in the selection of readers. This will prove an incitement to improvement in Reading, as well as in Composition.

Then present one or two pleasant, familiar dialogues, and several short declamations. The dialogues should be easy and natural, and should have a pointed moral. The declamations should be timely, and adapted to the ages of the boys who deliver them. Conclude the exercises with one or two school-songs. Such exercises cannot fail to impel pupils to renewed efforts, and to awaken a wonderful interest among the patrons and friends of the school.

To aid in providing material for such exercises we shall, within a few months, begin the publication of appropriate declamations, and school dialogues. For that purpose, we wish contributions of original dialogues of sterling interest and decided adaptation; and we are willing to pay for them. Surely, there are in our schools enough of suggestive incidents on which to base such dialogues. Who will aid us?

Our Notes and Queries.

INQUIRIES as to various points more or less directly connected with educational matters, have become so numerous as to require a special department in the Monthly for the insertion of those which may be of general interest, and for such brief notes as our contributors may furnish relating to schools and literary and scientific matters, or other subjects in any way pertaining to educational interests. In making inquiries, and in replying to those of others, our correspondents should endeavor to be as concise as possible. Initials will suffice for signatures, but the name and address of the writer must always be given.

EDITORIAL CORRESPONDENCE.

London, March 2, 1865.

A Democratic School.—Its Object.—Lectures.—College Building.—Library.—Coffee-Room.—Tuition-Fees.—Preparatory Department.—General Character of the Students.—Lectures.—Maurice.—Louis Blanc.

The Workingmen's College.

THE nature of my employments in London has kept me busy at the Library of the British Museum, instead of allowing me that leisure which I enjoyed at Edinburgh to visit schools: a part of the results of which has been given in preceding letters. Among the educational institutions which I could visit in the evenings, when the great library is closed, none have interested me more than the Workingmen's College, under the direct supervision, and, as we say in America, presidency, of the distinguished Rev. F. D. Maurice, one of the foremost leaders of English thought, and the man to whom Stanley, Kingsley, and those of that ilk, look for their intellectual guidance and inspiration. And I will devote this letter to it, not, primarily, because it commands the service of such men as Mr. Maurice, Mr. Ruskin, and Mr. Hughes, but because it fills a space still open in America, so far as my knowledge extends, but which is subject in New York and Boston to just the same conditions as those which obtain here in London.

Object of the Institution.

The Workingmen's college is not an adult-school: it is a college. It is a *workingmen's* college; but that does not imply that it is devoted to bricklayers and blacksmiths: it does not exclude these, but it employs the word "workingmen" in a wide sense. All who are not strictly professional men are welcome to it: nor would professional men, wishing to bring up any special branch, be excluded: it is not exclusive—it is inclusive—it is thoroughly democratic—it is the very expression of the democracy of Mr. Maurice, Mr. Ruskin, Kingsley, and Mr. Hughes. Men of all ages sit together at the lectures: the question of age is not asked, except to ascertain whether the candidate is over sixteen There is no preliminary examination,

though there is a preliminary department to the college, where men who wish to attend to the neglected branches of a common English education can remedy the deficiency. But the college proper takes all men who come to attend its lectures, enrolls them on its lists without hesitation, and gives them a cordial welcome.

CHARACTER OF INSTRUCTION.

The lectures are all given in the evening, some of them at eight, and some at nine o'clock, and continue some an hour, some two hours. There are four terms in the year, and each term occupies a little more than two months. The course of lectures embraces the critical study of the Scriptures, Drawing, Bookkeeping, Greek, French, English Literature, Physical Geography, Geology, Structural Botany, Algebra, Geometry, Logic, History, and Military Tactics. The Biblical and Historical departments are in the able hands of Mr. Maurice; that of Drawing is under the general direction of Mr. Ruskin. The other teachers are not men well known, so far away as America, but they have a fine local reputation, and are among the most prominent graduates of the two great Universities.

THE COLLEGE BUILDING.

The college is on Great Ormond street, a short walk from the thronged thoroughfare of Holborn, and in one of the accessible parts of London. The premises were, not a hundred years ago, the mansion of Lord-Chancellor Thurlow, yet it is doubtful whether in the days of its palatial dignity, it was devoted to a nobler use than now, when the fashion of London has gone westward, and the Lord-Chancellors no longer live as in the plain days of the Georges, in a good, solid brick house, twenty-five feet broad at the front. The two lower rooms are devoted to the Library and the Coffee-room: in one of which, from seven in the evening till ten, you may see a number of thoughtful, earnest men, some young, some middle-aged, and a few gray, poring over the admirably selected books accumulated there; in the other you may, in the English fashion, enjoy a cup of tea or coffee, chuckle over *Punch* or digest the *Atheneum* and *Times* at your leisure. On the second and third stories are the lecture-rooms, some of them larger, some smaller; Lord Thurlow's drawing-rooms being now the resort of the great classes in French, History and Biblical study, while the chambers and drawing-rooms of the burly, hot-headed, and wine-bibbing Chancellor are now the gathering rooms of the classes in Drawing, Geology and Geometry, and German. The college is admirably housed; and were a special building to be erected for it, it could hardly be more conveniently planned.

TUITION FEES.

Of the prices of tuition one word ought to be said. True to the general character of the Workingmen's College, these have been set so low, that instruction is open to almost all who have ambition enough to gain its benefits. A small fee of one shilling and six pence is demanded on entering the institution, and a special term-fee of one shilling is also charged. These pay the rent and the general expenses of the building. For each course of the one-hour lectures attended, two shillings per week are demanded; for the two-hour lectures, three shillings. This is but two and a half to three pence an hour for able instruction. How favorably this compares with the round sums of Oxford, Cambridge, or even with the prices at Kings College and University College! Shillings, at the Workingmen's College, take the place of guineas at those aristocratic institutions.

THE STUDENTS.

Of the preliminary department not much need be said. It is equally open with the college, and equally beneficial. I have not come in contact with any of its students: but I doubt whether they differ much from those in the college proper, except in respect of acquisition. But the latter gentlemen I have found thoroughly well bred, and well informed. They vary widely in their callings: some are clerks, some telegraph operators, some bookkeepers, some are artisans. But the tone of feeling is high among them all—not false, not foolish, not supercilious, but honorable alike to them and the learning which they seek. There is nothing in them which gives the marks of men who are trying to make up in their manhood for grievous neglect in boyhood: there is nothing of the overgrown abcdarian among them. They are scholarly men, anxious to "go on unto perfection," who find that the organized method of this Workingmen's College is the best of appliances to help them.

The excellent results of this institution, aided, doubtless, by the prestige of the able Principal and the distinguished corps of teachers, has led to the establishment of kindred institutions in other large cities of Great Britain, and in them all they are doing, I believe, a great and noble work.

THE INSTRUCTORS.

I have not yet seen Mr. Ruskin nor Mr. Hughes, author of "Tom Brown at Rugby,"

and "Tom Brown at Oxford," but Mr. Maurice and M. Louis Blanc I have seen. Mr. Maurice, author, pastor of St. Peter's Church, and Principal of the College, is a man of about sixty, and is one of the noblest-looking men I have ever seen. He wears a thoughtful, composed face; and his eye, deep and liquid, is full of expression. I heard him read the opening lecture of the course, and hardly knew which to admire the most, the admirable delivery, the beautiful style, or the rich thought. The theme was the plain one, "The Studies of the College," but it was discussed in so broad, comprehensive, and kindly a spirit, that all were charmed. One Sunday evening I had the pleasure of hearing him in one of his Biblical prelections, which, to me, was not so satisfactory; the subject was the Conversion of St. Paul. It was what we should call evangelical in America, but rather cold and rigid. He seems to try to get so far away from the use of any theological expressions, different from the current language of literature, that he falls on the other side: you fail to catch the distinctive meaning of the great truths he is trying to present, and crave involuntarily a more exact and scientific expression, even if it be at the cost of a rather dry technology.

M. Louis Blanc, the great French republican exile, who not long since delivered to the College a lecture on Molière, is a short, vigorous, earnest, fiery man, full of thought, and vital with genius. He has the philosophical cast of mind, with an intensity of expression which is not essentially philosophic. He resides quietly here in London, and contributes much to the radical French press. He is not officially connected with the Workingmen's College, but is in close affiliation with that circle of choice spirits with whom the charge of this excellent institution is not a Utopian dream, but a present and beneficent reality.

W. L. G.

ANDERSON, Ten., Feb. 18, 1865.

Educational Matters in the South.—Former Character of Schools.—Need of Encouragement.—Opening for Teachers.—Laborers Wanted.—Obstacles.

THE society of the South is so broken up that there is not much attention paid to schools. Something should be done to ameliorate our condition, and it is for you of the North to supply us in that particular. Immediately in this neighborhood there is a school, but it is of poor character. And yet it seems to suit the people.

There always has been a great want of good schools in Tennessee and in the South generally, and the proper means and influence were never brought to bear. The "School Fund" in this State, never judiciously expended, was often squandered, and the class of teachers and school-ma'ms emigrating from the North were generally of the lowest type. True, whenever one was regularly *salaried* and sent on, he or she proved good. I learn, Mr. Editor, that the conductors and publishers of the MONTHLY are at the head of a noble institution, and can help build up this great moral wreck of society and aid in bringing order out of this chaos. Doubtless you have a surplus of first-class teachers, and can influence them to volunteer. Here is the field. The people will take hold under your endorsement. They have little money, because there was not one quarter crop made last year, but they will pay for learning. Say to teachers, there is Huntsville, Ala., Fayetteville, Ten., Shelbyville, Ten., Winchester, Ten., Decatur, Ala., Chattanooga, Ten., and many other places which need them. And if they will throw aside all prejudices against the South they should go south to these points. The "negro question" is settled as far as we are concerned; and now let us have some of the glorious beauties and enterprises of your people propagated here. We have to come together, and let us get at each other right this time. Encourage, also, laborers to come; for, really, we need them as much as we do teachers, since we are deprived of negro labor. Those of us who think we can survive the shock, are glad to get rid of the responsibility. The poor slaves are in a sad fix, following up the army, and scattering everywhere and not doing much good anywhere. They should be sent to the rear or colonized, immediately, save those who are in arms for the United States. The greatest difficulty with us is to make the connection between negro and white labor in time; and we are compelled to call upon the noble spirits of the North to think of us in this regard. If we have been guilty of a stupendous folly, do not seek to crush us; but throw the mantle of charity over our misdeeds, and take the cup away from us, for we have drunk its bitter dregs. I have written this letter hastily, without application of mind, though I know there is nothing wrong said. You of the North have my warmest regards, especially since I have conversed with thousands of its soldiery passing through this my native valley.

M. J. G.

[The time is coming when there will be a good school in every neighborhood of the South. The globe, the blackboard and chalk, and the sound of the schoolmaster's voice, will be familiar everywhere. West Virginia has already begun the work.—ED.]

SCIENCE AND THE ARTS.

——At a late meeting of the Chemical Society (London), Prof. Wauklyn, in a paper on the "Action of Sulph-hydrate of Potassium upon Acetic Ether," pointed out the two reactions which were possible in this case, and showed the bearing of the resultant change upon the theoretical constitution of the ether. If the old view was correct, the radical of the acetate of ethyl should unite with sulphur to form mercaptan; but another result was possible, viz.: that the sulphur should combine with the acid, and then thiacetate of potash would be formed. His experiments were not yet quite decisive; but he would confidently state that no mercaptan was generated, which was necessary if acetic ether was the acetate of ethyl.

——At the Royal Academy of Sciences (Berlin), M. Parthey recently read a memoir on "The Upper Course of the Nile according to Ptolemy," in which he compares the description of the sources and course of the Nile, as laid down by the ancient geographer, with the results of the recent researches of Speke and Grant. From Ptolemy's statements, and from those of the unknown author of a Greek fragment, supposed to be of the seventh or eighth century, first published by Hudson, in 1717, the supposed Mountains of the Moon, containing the sources of the Nile, lie in 12° south lat.; and, from them several streams run down to two lakes, under the 6th and 7th par. of lat. south, and separated by about 8° of long. A third lake is situated about 4° further to the east, and immediately under the equator. The latter appears to be identical with the lake called Victoria Nyanza, by Speke.

——An apothecary, at Nantes, has just discovered, by the merest accident, that ammonia will put out fires. He happened to have about seventy litres of benzine in his cellar, and his boy going down carelessly with a light, had set fire to it. Assistance was speedily at hand, and pail after pail of water was being poured into the cellar without producing any effect, when the apothecary himself took up a pail which was standing neglected in a corner, and emptied the contents into the cellar. To his astonishment the flames were quenched as if by magic, and upon examination he found that the pail, which belonged to his laboratory, had contained a quantity of liquid ammonia. The result is easy to explain on scientific principles; for ammonia, which consists of eighty-two parts of nitrogen and eighteen of hydrogen, is easily decomposed by heat; and the nitrogen thus set free in the midst of a conflagration, must infallibly put out the flames. A large supply of liquid ammonia properly administered would be the promptest fire-extinguisher ever imagined.

——A remarkable petrifaction of an entire tree, was lately discovered in the Baltimore mine, on the Monongahela river, while blasting for coal. The piece of the trunk taken out weighs nearly four thousand pounds, and still there remains the root of the tree imbedded in the coal. There are also to be found in the same mine petrifactions of the cactus and other plants peculiar to tropical climates.

——The French papers tell of the success of a surgical operation, heretofore considered impossible. A young girl, turning her head too quickly, dislocated some of the upper cervical vertebræ. A paralysis of the lower limbs and the trunk ensued; the diaphragm alone retained its sensation. Apparently, the patient had but a few hours to live. M. Maisonneuve resolved to attempt to bring the vertebræ into position. With the assistance of a fellow-surgeon, he seized the patient by the top of the head and the skin, and gave a gentle rotary motion to the vertebræ, which resulted in bringing them into their former position. The paralysis ceased almost immediately, and a week after the patient was able to walk as though nothing had happened to her.

——Dr. Jackson, of Boston, has discovered an immense deposit of emery in Massachusetts, which proves to be of as good quality as the Naxos emery. The Chester emery (as he terms that discovered by him) contains 60.4 per cent. of alumina, and 39.6 pr. ct. of protoxyd of iron, thus differing very slightly in composition from that of Naxos, which contains 62.3 per cent. of alumina, and 37.7 per cent. of protoxyd of iron. Dr. Jackson is inclined to regard emery as a distinct species and not as a mere granular form of corundum or sapphire. In view of the immense increase in the manufacture of steel in our country, this discovery is likely to prove of incalculable value.

——One element of the solution of the question of spontaneous generation seems to reside in the sunlight, which produces some effects that are not known to result from artificial light or heat, as has already been made known by Messrs. Pouchet and Ch. Morren. Some new facts in their support have been observed by Prof. Monte-

gazza at the University of Pavia. Two female frogs were quickly killed by the destruction of the spinal marrow, and placed in two glass vases, each of which contained 115 cubic centimetres of well-water perfectly transparent, and free from foreign bodies. One of these vases was left in diffused light, the other was placed in a box, which did not permit a single ray of light to reach it. The experiment was continued seventeen months. At every time the two vases were compared, they remained exposed to the air for an hour or more, and the air was renewed at every observation. Germs could therefore very easily fall in, yet the results were very different in the two cases. The statement of all the results is too long to be given, but an observation made after seven months putrefaction at a temperature of 10° Cent., gave the following: *In the light;* the liquid had a slight odor of boiled meat. On the surface many lively Kolpodes, a great quantity of Vibrios, some Alysea, some Infusoria, which strikingly resemble the Zoosperms of Tritons. At the bottom, some dead Kolpódes and some in the act of multiplying by division into two or four individuals. Also many Vibrios, and some Monads. *In the dark;* the liquid had a strong odor of mushrooms. No organisms; the whole mass liquid.

EDUCATIONAL INTELLIGENCE.

LOUISIANA.

The last "Annual Report to the General Assembly," by John Mac Nair, Esq., State Superintendent of Public Education, is a carefully prepared document of forty duodecimo pages. It begins with an interesting account of education in Louisiana in the early times. It lucidly develops the views of Governor Claiborne in 1804, Governor Robertson in 1823, and Governor Roman in 1831. The early plans did not accomplish good results, because of the manifest lack of democratic principles in the management of the affairs of the public school system.

Mr. Mac Nair, upon taking his office, found that he was entirely destitute of records, as his predecessor had decamped with all the papers of the office. Seeking to obtain the fullest and most accurate information touching the present condition of the public schools in the State, he addressed a catechetical circular to gentlemen residing in the several parishes of Louisiana, and the answers to the questions he propounded have brought to light the following facts:

1. The State of Louisiana is divided into forty-nine parishes, which in turn are subdivided into eleven hundred school districts. The total number of educable children in the State is one hundred and five thousand, forty thousand of whom reside in the city of New Orleans, and of the whole number only about one half attend school.

2. In most of the rural parishes the schoolhouses are "dingy, rickety, half-roofless sheds or shanties, such as a planter of ordinary capacity for managing his affairs would not allow his negroes to inhabit."

3. In each school district three persons are annually elected to fill the honorable and responsible office of school director, whose duty it is to examine and employ teachers. Most of the individuals thus chosen are so illiterate that in signing a teacher's certificate, or other public document, they make their X instead of signing their name.

4. A majority of the teachers employed are males, many of whom are of immoral habits, and not a few confirmed drunkards. In the report of 1861 it is stated: "The qualifications of teachers, with a very few exceptions, are very indifferent, both morally and intellectualfy."

In order to depreciate the system of common schools, and prevent the general diffusion of intelligence among the poor whites of the State, the wealthy classes favor the election of the above described directors, and the employment of such teachers.

In his able report Mr. Mac Nair has made some valuable suggestions tending to improvements in the system, and we may reasonably look forward to a better state of things under his administration of the educational affairs of this State.

MINNESOTA.

The Legislature of Minnesota passed an act at its recent session making a grant of 75,000 acres of land to each of the three normal schools "now and hereafter to be established" in that State. There was but one opposing vote in the entire body

This munificent grant, it is estimated by competent judges, will yield a fund of half a million of dollars for each of the institutions referred to, the income of which will be sacredly devoted to the work of training teachers. At the legal rate of interest, this fund will afford an annual income of $35,000, about three times the amount appropriated to any similar institution in this country. The normal school at Winona is now in a very prosperous condition. The model and practice schools are already in operation, and every department of the school is full. A large and commodious edifice will soon be erected. Minnesota is rapidly marching forward to the front rank in educational matters.

INDIANA.

In the "School Law," just amended by the Legislature of Indiana, we notice the following points:

It increases the school tax for tuition on the taxable property of the State from ten cents to sixteen cents on each $100 of the valuation of such property.

It limits the number of school trustees for each incorporated town and city to three, and more clearly defines their powers, duties, and liabilities.

It provides that if any teacher shall commence a school without having a license to teach, which is in full force at the commencement of the school, such teacher thereby forfeits all right to compensation out of the tuition revenue for the time so taught without license.

It requires school examiners to hold, or cause to be held in their respective counties, a teachers' institute for the term of five days in each year; and if there is an average daily attendance of twenty-five teachers or more, he may draw from the county treasury $35 for the payment of expenses; and if there is an average daily attendance of fifty or more, he may draw from the county treasury $50 for the same purpose. The compensation of examiners is increased to $3 per day, to be allowed by the board of county commissioners, and payable from the county treasury, and said board is required to limit the number of days' services for which the examiners of their respective counties may be thus compensated.

It amends the law relative to the duties of superintendent of public instruction, and relieves him of one half of the labor and expense of visiting the several counties, which has heretofore been required.

It provides a permanent annual revenue of one tenth of a mill on each dollar valuation of taxable property, for the support of the township libraries, which will amount annually to about $55,000.

It reorganizes the State board of education, and makes it to consist of the governor, the State superintendent of public instruction, the president of the State university, the president of the normal school (if such an office is created), and the superintendent of the common schools of the three largest cities of the State. The superintendent of public instruction is made president of the board.

Said board is made also a State board of examiners, for the examination of applicants for license to teach, with authority to license such as are found to possess eminent qualifications. The licenses granted by said board are good throughout the State, and for the lifetime of the person to whom they are issued, unless revoked by the board.

A bill for the establishment of a State normal school passed the House of Representatives, but was not reached in the Senate.

MISCELLANY.

——"Boys, I must have closer attention to your books. The first time one of you sees another idle, I want you to inform me, and I will attend to the case."

"Ah," thought I to myself, "there is Joe Simpson that I don't like. I'll watch him, and if I see him look off his book I'll tell." It was not long before I saw Joe look off his book, and immediately I informed the master.

"Indeed," said he; "how did you know he was idle?"

"I saw him," said I.

"You did! and were your eyes on your book when you saw him?"

I was caught, and never watched idle boys again.

If we are sufficiently watchful over our own conduct, we shall have no time to find fault with the conduct of others.

——The only practical joke in which R. Harris Bareham, better known as Thomas Ingoldsby, ever personally engaged, was enacted when he was a boy at Canter-

bury. In company with a schoolfellow, he entered a Quaker meeting-house, when, looking around at the grave assembly, the latter held up a penny tart, and said solemnly, "whoever speaks first shall have this pie." "Go thy way, boy," said a drab-colored gentleman, rising, "go thy way. "The pie's yours, sir," said Bareham, placing it before the astonished speaker, and hastily effecting his escape.

——A most important discovery has just been made in South America. The head waters of the Amazon commence in Peru, in the Andes, and a Peruvian steamer being sent to explore them, found the river navigable to a point three hundred miles from Lima, on the Pacific coast. The steamer navigated the Amazon two thousand miles, and its tributaries, six hundred miles. This is, in fact, a route to the Pacific.

——The Emperor of Russia has transmitted to the library of Yale, through Baron Stoekl, at Washington, a splendid copy of the celebrated *Codex Sinaiticus*, which was found at the convent of St. Catherine, on Mount Sinai, in 1859, and is considered by Dr. Tischendorf, the discoverer, the best authority as the correct text of the New Testament. American scholars will not undervalue this noble gift of the Emperor, through whose liberality the work was engraved for distribution.

——The brother of Beethoven signed his name to distinguish himself from his landless brother, "—— von Beethoven, landowner." The immortal composer retorted by signing his, "Ludwig von Beethoven, brain owner."

——The English residents at Rome lately got up some private theatrical performances, and were obliged to apply for the permission of his holiness to act in Lent. They made petition, therefore, to Monsignor Talbot, who, being a convert from the English Church, of which he was once a beneficed clergyman, is an ultra in everything; he rejected their prayer with indignation. The disappointed actors then applied to some one else, who went directly to his holiness himself, who, wonderful to relate, gave full consent, but insisted on having his share of the fun, by ordering Monsignor Talbot to come and translate the pieces to him into choice Italian. One of those was "Box and Cox."

——The custom-house officers of San Francisco have discovered a very ingenious Chinese trick, which led to the seizure of a lot of smuggled opium. Among a cargo were 400 tubs invoiced as eggs, value stated at one dollar each; the eggs were coated with a peculiar kind of varnish to preserve them. One of the officers, in examining the eggs, scraped off a little varnish, and disclosed a metallic case, egg-shaped, filled with opium. Each metallic egg is worth $300. There was a thousand of them.

——The arid waste of the Desert of Sahara, under the hands of enterprising Frenchmen, is to be clad with verdure, and water is to spring up in abundance to the surface wheresoever required. Five places are named where deep wells have been sunk on the artesian principle, and the result has been a flood of water to the surface, continuous and vast. Besides this, there is something for the epicure, who, on his travels, has tasted only dried meat, dates, and dried fish, for fish have come to the surface with the stream, which flows from some mysterious source beneath the crust of the earth.

—— *Shurtleff College*, Baptist, at Alton, Ill., founded more than twenty years ago by the late Dr. Shurtleff of Boston, is now in a flourishing condition. Its friends at the West are raising a further fund of $100,000 for its further endowment. Rev. Hubbell Loomis, now over ninety years old, father of Prof. E. Loomis of Yale, has just given his valuable library to this western college.

—— The Baptists of the Northern States have under their control nine colleges, for which subscriptions are now in progress to raise endowments amounting to upwards oi $400,000; and three theological seminaries, for which they are raising at least $10,000, all of which they hope to complete before the end of the year 1865.

—— The colored troops in the Army of the Potomac are exhibiting a wonderful eagerness and readiness to learn. The Christian Commission are endeavoring to meet this new demand as far as they can, and are in want of fifty good lay delegates to act as teachers. Any who are willing to go on this mission are requested to address Charles Desmond, at Washington-street, Boston.

—— France has 97 schools for the training of teachers, or more briefly, 97 Normal schools; England, 23; Prussia, as early as 1835, 51; Austria, 11; Saxony, 10; Bavaria, 9. In our own country, Maine has two in process of erection; Massachusetts has four; Rhode Island, one; Connecticut, one; New York, one; Pennsylvania, three or more; New Jersey, two; Michigan, one; Illinois one; Minnesota, one; Iowa, one; California one. These are State Institutions, institutions created by and provided for by the State.

NOTES AND QUERIES.

NOTES.

Iroquois Names.—According to Dr. E. B. O'Callaghan, the derivation of certain names of places is given in the following notes. C.

Schoharie. From S, the article, and *Oquari*, a Bear.

Canajoharie. The village of the bear; from *Canada*, village, and *Oquari*, a Bear.

Estaragoha. The Big Rock (somewhere near Tribes Hill, Fulton Co., about 24 miles west of Schenectady); from *Ostenra*, a rock, and *Goa*, big.

Little Falls, Herkimer Co. Astenrogen; from *Ostenra*, a rock, and *Oge*, in the river of water.

Canajoharie Creek. Tecayonharonwe; from *Te*, sign of the dual number; *Cayunghaw*, creek, and *Ongwe*, men; i. e., the two men's or people's creek. It is now called Bowman's creek.

Stone Creek, Schoharie Co: Oneyagine; from *Oneya*, a stone.

Rochester, Monroe Co. Gasconsage; The perpendicular falls.

Cumberland Head, Plattsburgh; Squinanton, from *Oskennonton*, a Deer, which probably resorted to that place.

Cookquago, or west branch of the Delaware river; from *Kekoa*, or *Okowa*, an owl, and *goa*, big.

Oghquago, in Broome Co., is another form of the word, and seems to mean, The country of the Big Owl.

Caughnawaga. At the Rapid; from *Onawa*, Rapid, and *Ke*, at; custom permitting the changing of the initial *O* to *Ka*.

QUERIES.

"*E pur si Muove.*"—These words, which were the caption of an editorial in the MONTHLY lately, are sometimes given thus: Eppur si muove. Which is right? I know of no such word as *eppur* in the entire Italian vocabulary. Is it not always a typographical error? T. W. M.

[It is not an error of the printers. The original phrase was doubtless E pur si muove (literally, and yet it moves). "Eppur" is merely a union of two words, the additional letter being added to facilitate pronunciation, as is often done in the French, and, sometimes, in our own language. Eppur, however, is not an elegant word; and the phrase in question should be given in its primitive, and, as it may be termed, historical form.—EDITOR.]

The "Short And."—Disconcerted lately by a pupil, who inquired the origin of the character [&] so frequently used for "and." Is it an arbitrary sign? UNDENER.

[It was at first simply the Latin word *et* (and), made by extending upward the lower curve of the *e*, and crossing it like the letter *t*. This form was preserved through the black-letter era; an approximation to it is often seen on signboards, and is now coming into use among type-founders.—EDITOR.]

REPLIES.

Free Schools.—In the MONTHLY, or in one of our educational journals, I lately saw an inquiry as to the origin of free-schools in this State. In the year 1795 an act passed the Legislature appropriating £20,000 annually for the term of five years, for the purpose of encouraging and maintaining the schools in the State; the law to be considered as taking effect on the 7th of April. This was the foundation of the free-school system. MUNSELL.

CURRENT PULICATIONS.

IN works of fiction the rules of logic and the ornaments of rhetoric are equally indispensable. The biography of an individual, or the history of a nation, would not necessarily be imperfect although it consisted of the simplest and most didactic sentences. A poem might be alike beautiful and unexceptionable, although it contained no historical facts, no scientific allusions, no important moral truths. But a novel should combine all literary excellence. It should have the distinctive features of history and biography; it should be as systematic as any scientific treatise; its tendency should be as elevating as the strictest code of morals demand or can produce, and through all its elements the spirit of poetry should dispense its graces, and manifest its power, though it assume no conspicuous and startling form. Such the novel should be, and may become. It would be difficult and hazardous to point to a single volume as a specimen of unquestionable excellence. But the gradual improvement of style and execution which has long been taking place,

brings at least one series of volumes approximating to the ideal novel. This series[1-3] consists of three volumes. The first of these, "Chronicles of the Schönberg-Cotta Family," was given to the public through the columns of an English magazine, about a year ago, but was immediately republished in this country, in more permanent form. It is a history of the life of Martin Luther, and of the dawn of the Reformation. The second, "The Early Dawn," soon followed. It comprised several graphic sketches illustrative of the progress of Christianity in England,—some of these, though brief, and entitled "Stories," having the essential features of a novel. The third appeared recently. It is the "Diary of Kitty Trevylyan," describing the times of Whitfield and the Wesleys. One fact concerning these works is much to be regretted,—the order of publication expresses the respective merits of the volumes: the third is an inferior copy of the first. In regard to this, one of two things must be supposed,—either that "Kitty Trevylyan" finished her diary before the "Chronicles" were begun, or, that the author has made the third book "to order," without the inspiration which guided and controlled her while telling of the Schönberg-Cotta family.

The possibility of combining in a novel the various branches and styles of literature is best illustrated by the first of these works. The "Chronicles" ostensibly comprise the diaries of several members of the Cotta family, mainly those of Else and Friedrich, who are fictitious characters, and whose story constitutes the novel. They are represented as friends of Martin Luther in his earlier years, and opportunity is thus afforded for a biography of the Great Reformer. The fulness with which this is given brings collaterally so many important events of that period, as to embody a partial but graphic history of the Reformation. Although the story serves as mere machinery for the presentation of facts, yet, even when viewed as fictitious writing, irrespective of its purpose, it must be regarded as superior to the ordinary romances of the day. Little Else is as poetically beautiful as an Aphrodite, and as pure and womanly as a Madonna. She does not boldly obtrude upon attention, like the "maiden of the double vow," and the "black-veiled bride" of certain newspaper romances, nor startle us like one of Oliver Wendell Holmes's literary offspring, the rattlesnake girl; but she has a deeply interesting story, and we alternately smile, and weep, and wonder, during the recital. In the earlier entries of Else's Chronicle are many simple, artless, but suggestive passages like the following:

"Yet it is not suffering in itself that makes people saints, because I don't believe St. Elizabeth herself suffered more than our mother. It is true she used to leave her husband's side and kneel all night on the cold floor, while he was asleep. But the mother has done the same as that often and often. When any of the little ones has been ill, how often she has walked up and down hour after hour, with the sick child in her arms, soothing and fondling it, and quieting all its fretful cries with unwearying tender patience. Then St. Elizabeth fasted until she was almost a shadow; but how often have I seen our mother quietly distribute all that was nice and good in our frugal meals to my father and the children, scarcely leaving herself a bit, and hiding her plate behind a dish, that the father might not see."

"There is one thing St. Elizabeth did which certainly our mother would never do. She left her little fatherless children to go into a convent. Perhaps it was this that pleased God and the Lord Jesus Christ so very much, that they took her up to be so high in heaven."

"They say the souls of little unbaptized babes hover about for ever in darkness between heaven and hell. At Eisenach we have a Foundling Hospital, attached to one of the nunneries founded by St. Elizabeth, for such forsaken little ones. If St. Elizabeth could only establish a Foundling somewhere near the gates of paradise for such little nameless outcast child-souls! But I suppose she is too high in heaven, and too far from the gates, to hear the plaintive cries of such abandoned little ones. Or perhaps God, who was so much pleased with her for deserting her own little children, would not allow it. I suppose the saints in heaven who have been mothers, or even elder sisters like me, leave their mothers' hearts on earth, and that in paradise they are all monks and nuns like Aunt Agnes and Father Christopher."

Friedrich, Else's brother, is a chivalric, but dignified, scholarly character, illustrating the qualities evinced by many of the leading spirits of his age and country. He is both enthusiastic and logical, and the poetical and philosophical features which we require in a good novel are especially assigned to him by the author, as will be

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(1) CHRONICLES OF THE SCHÖNBERG-COTTA FAMILY. By Two of themselves. New York: M. W. Dodd. 12mo, pp. 552.

(2) THE EARLY DAWN; or Sketches of Christian Life in England in the Olden Time. Dodd. 12mo, pp. 397.

(3) THE DIARY OF MRS. KITTY TREVYLYAN: A story of the times of Whitefield and the Wesleys. Dodd. 12mo, pp. 456.

inferred on reading this extract from his diary.

"To me that laboratory of my father's, with its furnace, its models, its strange machines, is the most melancholy place in the world. It is like a haunted chamber,—haunted with the helpless, nameless ghosts of infants that have died at their birth,—the ghosts of vain and fruitless projects; like the ruins of a city that some earthquake had destroyed before it was finished, ruined palaces that were never roofed, ruined houses that were never inhabited, ruined churches that were never worshipped in. And yet what it is which has made him so unsuccessful, I can never exactly make out. He is no dreamer. He is no idler. He does not sit lazily down with folded arms and imagine his projects. He makes his calculations with the most laborious accuracy; he consults all the learned men and books he has access to.

"What can it be, then, that makes his life such a failure? I cannot think; unless it is that other great inventors and discoverers seem to have made their discoveries and inventions as it were *by the way*, in the course of their everyday life. It seems to me people do not become great, do not become discoverers and inventors by trying to be so, but by determining to do in the very best way what they have to do. Thus improvements suggest themselves, one by one, step by step; each improvement is tested as it is made by practical use, until at length the happy thought comes, not like an elf from the wild forests, but like an angel on the daily path; and the little improvements become the great invention."

In the case of a work of mixed character, like the one under consideration, its value is determined not by the fictitious elements, but by its biographical and historical features. Here, where most amenable to criticism, the Chronicles cannot be wholly exempted from animadversion. Many interesting facts respecting Dr. Luther, not generally known, are appropriately brought together. But the author evinces a fault or weakness common among biographers. The portrait-painter deserves commendation when he overlooks personal blemishes which would mar the beauty of his work. But the biographer—the limner of character—must not assume the privilege accorded to the artist; he may not ignore the faults and idiosyncracies of his subject. The author of Schönberg-Cotta displays a knowledge of Luther's life and character which cannot be reconciled with ignorance of some of his errors and weaknesses. Luther is correctly delineated as a generous, vigorous man, as a persevering student, as an earnest philosophical thinker, as a brave and successful champion of moral freedom. We see his smiles and his tears, hear him talking playfully with children, and seem to hear the echo of his deep, musical voice in his own sacred songs. But nothing is said of his superstition, his childish fear of devils and meddlesome spirits; no allusion is made to the bigotry sometimes evinced by him, and the harshness with which he denounced others who labored in the cause for which he fought; and it would never be suspected, by one who sees only the Schönberg-Cotta Luther, that in his Bible commentary, for which he is eulogized in our novel, he could so far humor certain temporal rulers about him as to show that polygamy was proper for the patriarchs, was not at all in contravention with divine law, and hence was excusable in those who assumed to regard the patriarchs as either prototypes or exemplars; it would not be suspected that the devout doctor was the same Luther who sanctioned and effected the marriage of the powerful Landgrave of Hesse to a second wife while designing still to retain the wife whom he yet claimed and recognized.

The omission of a few facts of this nature is the most censurable feature of the work, and in consideration of the abundance of good things presented, must not be dwelt upon. We know of no ostensibly fictitious work affording the interest, gratification, and instruction derivable from this literary model.

The principles of the "New Philosophy," concerning the correlation and conservation of forces, are not well understood in America by the vast majority of those who attempt to keep up with scientific discoveries. The only thorough work on the subject, as yet published in this country, is that of Dr. Tyndall, on "Heat as a Mode of Motion." Dr. Youmans has just published a reprint of the Essays[4] by Grove, Helmboltz, Meyer, Faraday, Liebig, and Carpenter, who are regarded as the most prominent expounders of the new views. His introduction is full of general scientific information, presented in an agreeable and popular style, affected neither by technicality nor by too austere simplicity. In this the author, after a careful defense of chemistry against the charge of fostering materialism, gives us a condensed account of the doctrines and their early expounders, Rumford and Davy. He discusses the claims of Rumford and Joule, and shows our countryman to be

4) The Correlation and Conservation of Forces: A series of expositions, by Prof. Grove, Prof. Helmboltz, Dr. Mayer, Dr. Faraday, Prof. Liebig, and Dr. Carpenter. With an introduction and brief biographical notices of the chief promoters of the new views. By Edward L. Youmans, M. D. New York: D. Appleton & Co. 12mo pp. 438.

thoroughly entitled to the honor of first approximating to the mechanical equivalent of heat, and announcing the correlation of forces. Dr. Youmans also coincides with Dr. Tyndall, in preferring the claims of Dr. Mayer, of Heilbronn, to those of Dr. Joule. Indeed, after reading the correspondence on this subject between Dr. Tyndall and Prof. Thomson, and noticing the acrimonious manner in which it was conducted by the latter, one cannot fail to be convinced of the justice of Mayer's claims. The republication of the latter gentleman's tracts will go far to prove the substantial basis upon which his claims rest. One of the most interesting, as well as most important topics, discussed by Drs. Grove, Liebig, and Carpenter, is the convertibility of vital and physical forces. The arguments adduced and ably supported by these philosophers are so clear, that we think no one will be found, a few years hence, to deny the intimate relation of light, heat, and electricity with the so-called vital forces, although now the doctrine is branded and shunned as infidel. It is unnecessary for us to enter into a discussion of the various points presented in the book, as the general principles of the new philosophy were presented in a previous number (Vol. I., No. 10). The essays themselves are too well known to require any extended comment. Their style is in most cases simple, and devoid of complex technicality. The brief biographical notices by Dr. Youmans give the book an additional value, by presenting a general knowledge of men concerning whom we know but little, notwithstanding the celebrity of their names. The book is in clear type, and is well bound. It should be in every thinking man's library, as a companion to Dr. Tyndall's finished treatise on heat.

The word "Essays" on a title-page has become suggestive of forthcoming dullness. We hope it will not deter our readers from examining one of the works[5] of Herbert Spencer, lately reissued in this country. His writings are original, alike in matter and in style, as full of life and vigor, and as instructive as those of Ruskin, which they in some degree resemble, though more condensed, and of more practical character. The first essay in the volume referred to is especially worthy the attention of every teacher and literary person. Brief and comprehensive, it does more to remove the mysteries of literature, and to give the philosophy of style, than any other treatise—it may almost be said, than all other treatises—with which we are acquainted.

The recent death of a distinguished prelate gave rise to various imperfect biographies and incomplete compilations of his papers scarcely entitled to the little notice they received. A complete collection[6] of his writings has been undertaken which will prove worthy the name of the venerable Archbishop, and will do much to perpetuate his fame. The volume already issued contains many of his most celebrated sermons, lectures, letters, and speeches. His speeches on the "School Question" are given in full. Some of the lectures, as "The Influence of Christianity on Civilization," "The Influence of Christianity on Social Servitude," and "The Mixture of Civil and Ecclesiastical Power in the Middle Ages," give not merely the prelate's views, but present facts respecting the history and policy of the Roman Church with which few Protestants are acquainted, and the dissemination of which would tend to loosen the stones of an insurmountable wall of partition.

Mr. Gage, whose interest in the cause of public instruction is well known to the readers of this MONTHLY, has performed a most valuable service for science and literature, by the translation of Ritter's "Comparative Geography."[7] With natural enthusiasm, he calls the book "the bright, compact crystal of Ritter's Life," and on examination it really proves to offer the condensation of his immense and varied researches—the net results of his lifelong studies. It is a work which, though simple and unpretentious in its form, exhibits, in every page, the full command over materials, and the masterly power of generalization that characterize the productions of the few gifted minds from whom a new science receives its form and impress. Carl Ritter may be called the creator of Comparative Geography. His name will always stand highest amongst those who have taught mankind to regard the earth—their habitation and abiding place—as a subject of profund and exhaustless investigation in its various relations to the physical progress of the race, and its advance toward perfection in the scale of animated beings. The simpler an idea is in itself, the more difficult it often is found to realize it. Our ordinary methods of Geographical instruction are encumbered and perplexed with

(5) ESSAYS: MORAL, POLITICAL AND ESTHETIC. By HERBERT SPENCER. New York: D. Appleton & Co. 12mo, pp. 382.

(6) THE COMPLETE WORKS OF THE MOST REVEREND JOHN HUGHES, D. D., Archbishop of New York. Edited by Lawrence Kehoe. New York: American News Company. 8vo, pp. 670.

(7) COMPARATIVE GEOGRAPHY. By Carl Ritter, late Professor of Geography in the University of Berlin. Translated for the use of Colleges and Schools, by WILLIAM L. GAGE. Philadelphia: J. B. Lippincott & Co. 12mo.

artificial and empirical distinctions and divisions. These must be laid aside by those who would grasp creation in its widest sense, according to the plan adopted in this admirable manual. Here the student is at once brought face to face with the great facts of nature, instead of the arbitrary systems of man. A brief introduction, defining the place of our earth in the solar system, and its special cosmical adaptation to the necessities of the human race, opens the work. It is instinct with glowing thought, and cannot be read without awakening an ardor for the subject kindred with that felt by the author. The surface of the earth, considered in its most general relations, then follows. These include: its spheroidal form; threefold covvering, of air, earth, and water; contrast of land and water hemispheres; forms of the great land masses, their influence on civilization, etc., and constitute the first section of the book. In the second part a nearer view is taken of the earth's surface, and its configuration is studied and explained under the heads of—Highlands, Mountains and Mountain lands, Plateaus and their origin, River Systems, Watersheds, Lowlands, Plains, and Depressions, etc., all treated with the clearness of one whose knowledge places him on a commanding height, viewed from whence order takes the place of confusion, and the plan of what appears to others "a mighty maze," becomes self-apparent. The third division masses together the separate results acquired by the previous method of investigation, and applies them to the structure of continents, their dimensions, articulation, etc., and the effects arising from their physical structure on the nations that inhabit them, as displayed in the course of the world's history. It will, then, be seen how rich and suggestive becomes the study of Geography, when pursued with this breadth and thoroughness, in connection with the science of man. "In the people the country finds its reflection." On this basis must be founded all true philosophy of history. "The whole constitution of man is thoroughly connected with the earth on which he dwells—the roots of his being run down to it in uncounted numbers." By thus linking together the moral with the physical phenomena of creation, a new life is breathed into the dry bones of what was formerly the most arid of sciences—burdensome to the memory of pupils and incapable of fixing their attention. We can now, however, imagine no study more fascinating to the mind of an intelligent youth, than the views so ably promulgated in this book, if presented in connection with some good series of Physical Maps, like those now in course of publication by Professor Guyot. He will then be ennobled in his nature, by realizing, in the eloquent words of our author, that "the Earth finds its highest mission not in relation to inanimate nature, but to the world of intelligence,—the minds that dwell upon it—the spiritual world to which it gives bodies." He will learn to regard it as "the home of advancing millions; helping them all onward, and granting them new power to fulfill the exalted purposes of human life."

Owing to the general introduction of oratorical exercises into American schools, especially in the form of recitation and declamation, our demand for suitable textbooks has surpassed that of any other people. Compilers and publishers have attempted to meet this demand; but, with too few exceptions, the results have been unsatisfactory to judicious instructors. Large "Speakers" have been multiplied, containing many selections in prose and verse, but few of which are ever used. Many of these works either have no elocutionary instruction, or merely an introductory treatise, in small type, and of little practical utility. They are deficient in many essential elements, affording no aid in pronunciation, giving no definitions, no explanations of classical and other allusions, and have not even such a rational analysis as shall enable the student to clearly understand and appreciate the ideas or thoughts and feelings to be expressed. Among the few truly meritorious books in this department, Mr. Philbrick's new Speaker[7] deserves to occupy a most prominent position. The suggestions and hints on declamation in his introductory remarks are, in the main, judicious and practical. His selections in prose and verse are numerous, varied, and conveniently classified, embracing, in addition to the usual standard selections, many extracts from the best recent speeches, poems, and other productions. The biographical sketches, pronunciation of doubtful words, explanatory remarks, etc., "for the sake of artistic beauty in the page," appear in notes at the end of the volume. The notes are not as numerous as they should be; neither are they wholly free from mistakes. We notice *been'-ghen* given as the pronunciation of Bingen (bing'en); *ar-mah'-dah* for ar-ma'-da. The print, paper, and mechanical execution are remarkably good.

(7) The American Union Speaker: containing standard and recent selections in prose and poetry, for recitation and declamation in schools, academies and colleges. With introductory remarks on Education, and explanatory notes. By John D. Philbrick. Boston: Taggard & Thompson. 12mo, pp. 588.